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A Long Book-Length Novel of a Miracle Planet

By EANDO BINDER

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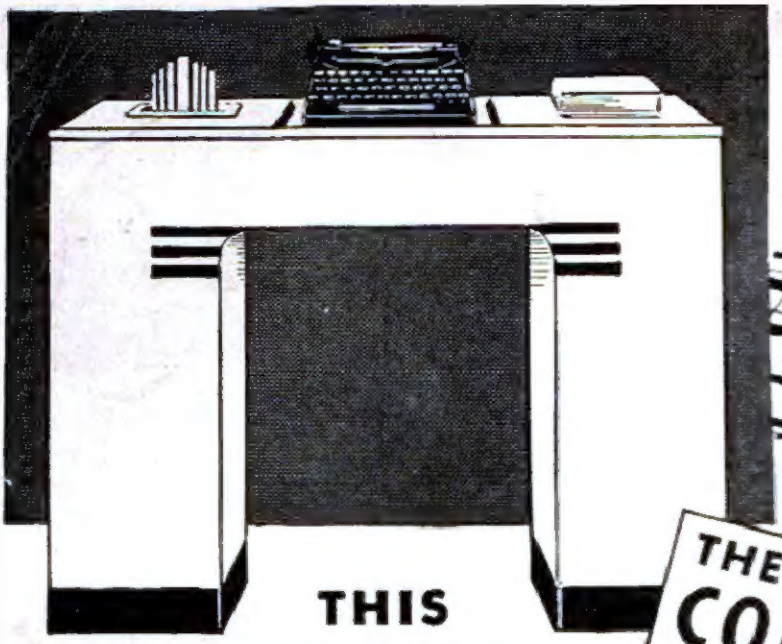

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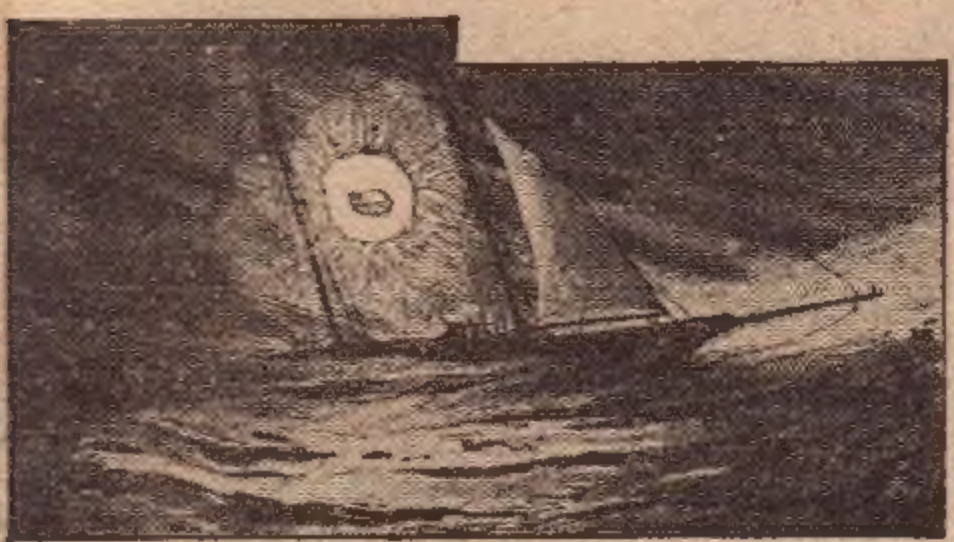
IF I FAILED...WE WERE ALL DEAD MEN

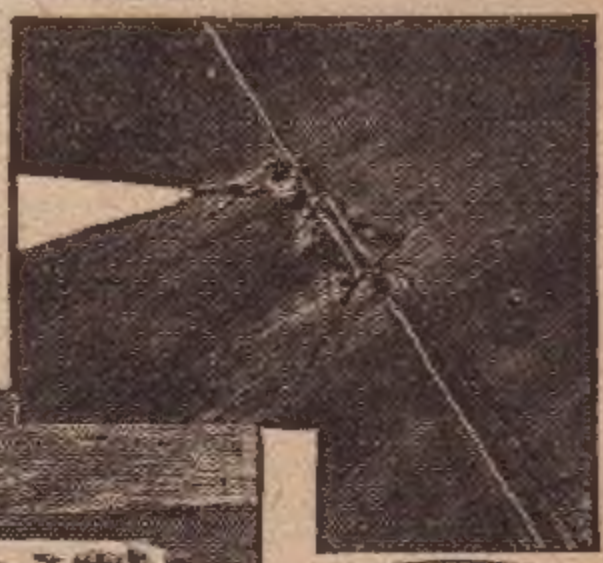
LASHED TO SHROUDS OF SINKING, BURNING SCHOONER, SAILORS SEE HOPE OF RESCUE FADE

❶ "The dream of my life, for which I had saved since I first went to sea at twelve, had come true!" writes Capt. Hans Milton of 610 West 111th St., New York City. "I was making my first voyage as master and owner of my own vessel, the two-masted topsail schooner 'Pioneer,' when the hurricane of last September caught us 400 miles off Nantucket.

❷ "We were pumping to keep afloat when we passed into the windless vortex of the storm where the waves were leaping and jumping crazily and where they crashed in our companion ways and filled the ship beyond hope of saving her. The five of us and the cat scrambled aloft for our lives. Our deck-load of lumber kept us afloat and without fresh water and with almost no food we lived, lashed to the rigging, for three endless days and nights.



❸ "Once a steamer hove in sight—but failing to see our distress signals, went her way. At 3 a.m. on the fourth morning steamer lights showed momentarily over the wild sea. We rigged a huge ball of sails and blankets, soaked it with gasoline, touched it off and hoisted it aloft.



❹ "But the steamer did not change her course. She thought we were fishing. The wind blew burning fragments back on the ship setting her afire in various places. I could see the stern light of the steamer going away from us. *If I couldn't stop her, we were all dead men!* I climbed to the fore-top and in desperation pulled my flashlight from my back pocket and in Morse code signalled 'Sinking... SOS...Help!'

❺ "Slowly, I saw the ship turn! In her last hour afloat, all of us and the cat were saved from the sinking, burning 'Pioneer' by those fine seamen of the United States Liner 'American Banker' and by the power of two tiny 'Eveready' *fresh* DATED batteries that stood by us in the blackest hour of our lives!

(*Signed*) Captain Hans Milton"

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STARTLING STORIES

Vol. I, No. 2 CONTENTS MARCH, 1939

A Complete Book-Length Scientifiction Novel

THE IMPOSSIBLE WORLD

By EANDO BINDER

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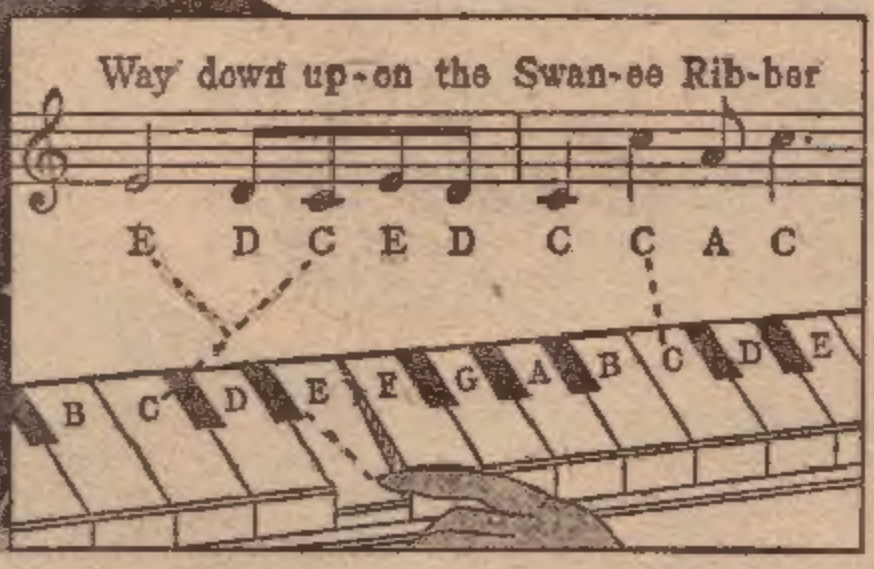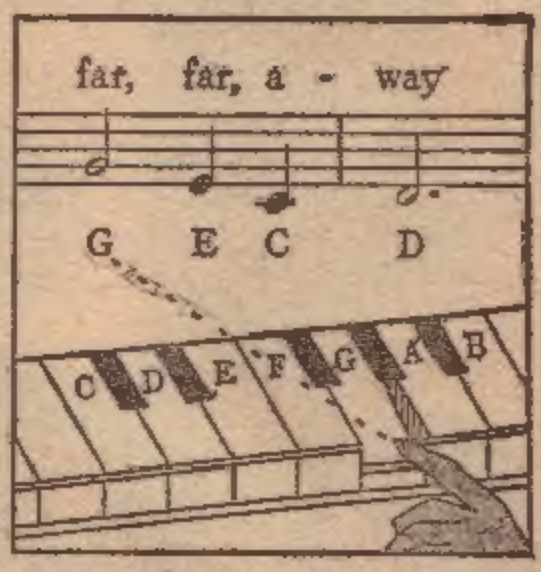

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**Actual pupils' names on request. Pictures by professional models.*

SEE HOW EASY IT IS!

• Look at the diagram above. The first note is "E". That's the white key to the right of the two black keys near the middle of the piano keyboard. The next note "D", one note lower, is the next white key to the left and, similarly, the next note, "C", is the next white key to the left of that one. The following three notes are simply a repetition of the first three and there you are, actually playing the familiar melody of "Swanee River".

That's the modern way to learn music: you learn to play by *playing*. No tedious study and practice. This shortcut method starts you on a real tune in your very first lesson. After a few weeks, you'll be able to read the notes off like a regular musician. Soon you are able to play scores of familiar favorites and new hits at sight. And that applies to any instrument: violin, guitar, accordion, saxophone, whichever you want to learn. It takes only a few minutes a day, costs only a few cents a lesson.

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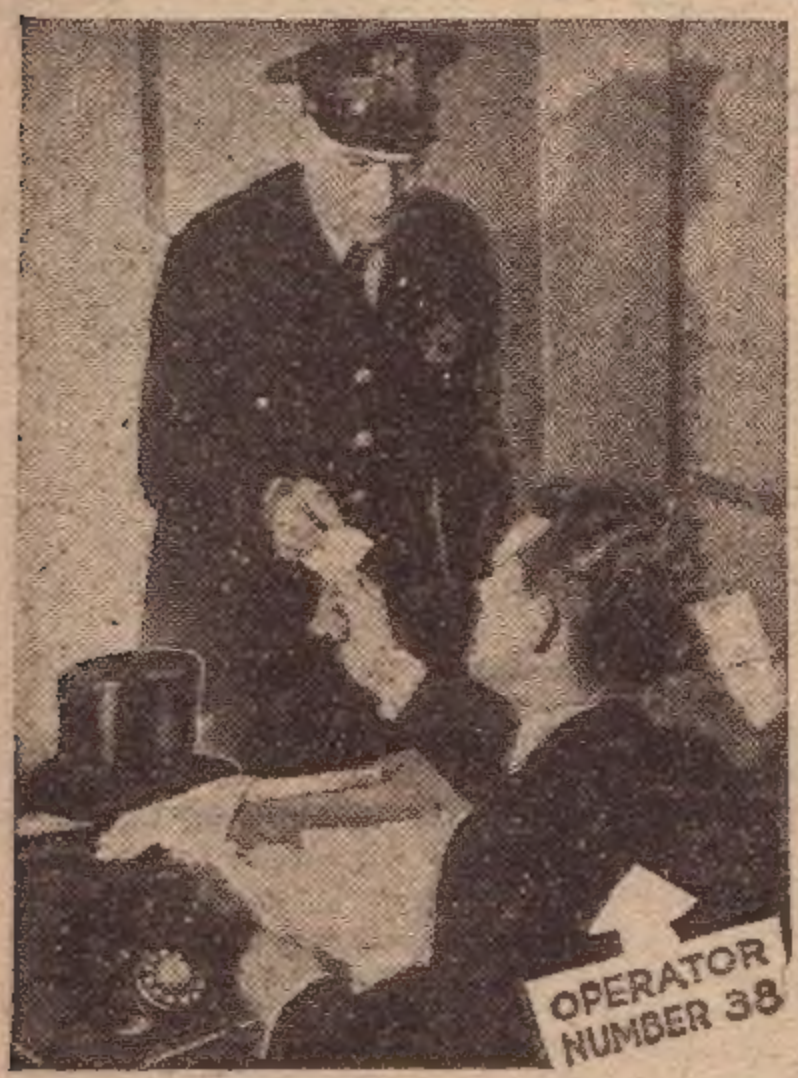
Arrest Him, Officer!

I'LL HAVE COMPLETE FACTS ON THE OTHER FELLOW TONIGHT!



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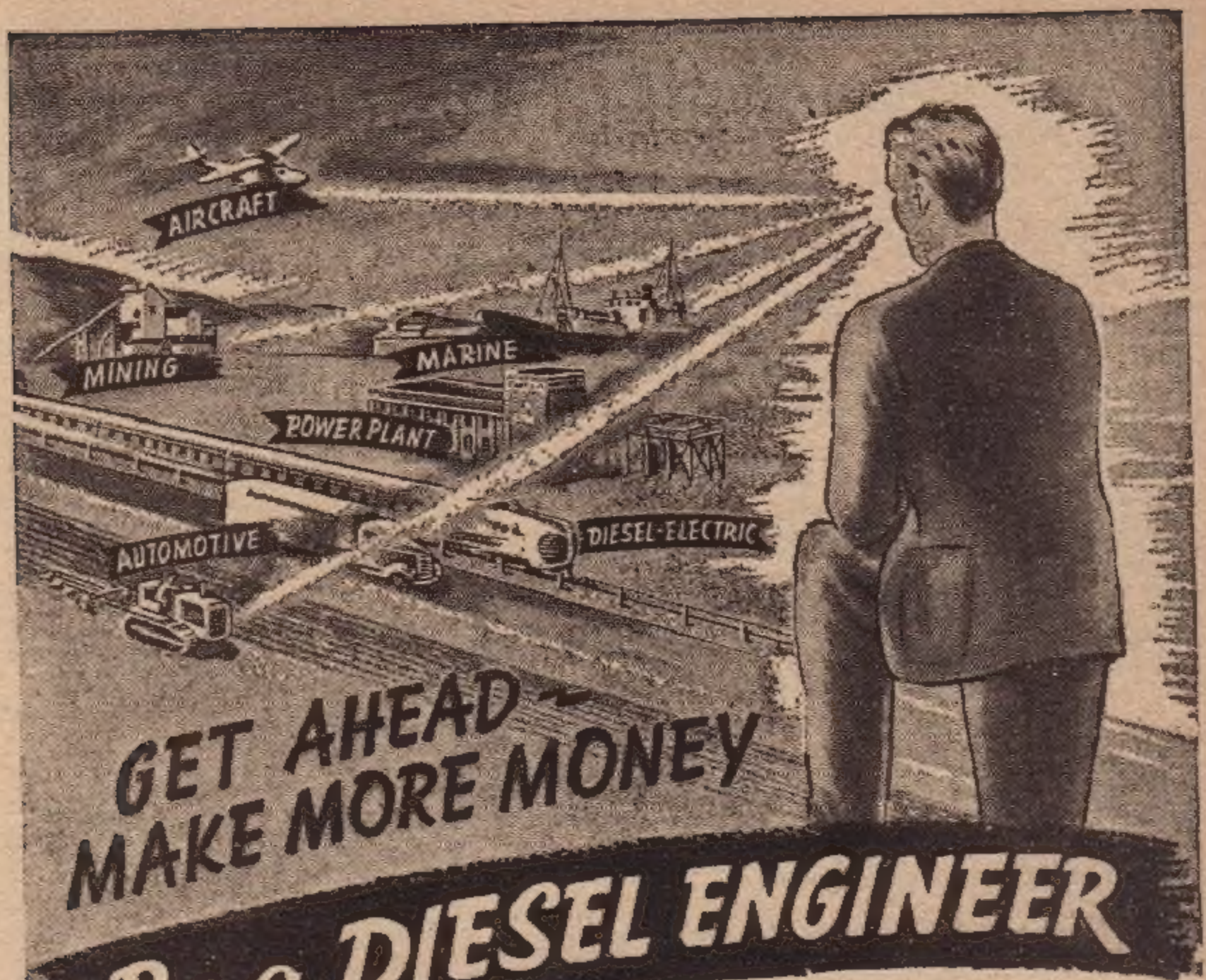

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This is a call for men everywhere to handle exclusive agency for one of the most unique business inventions of the day.

Forty years ago the horse and buggy business was supreme—today almost extinct. Twenty years ago the phonograph industry ran into many millions—today practically a relic. Only a comparatively few foresighted men saw the fortunes ahead in the automobile and the radio. Yet irresistible waves of public buying swept these men to fortune, and sent the buggy and the phonograph into the discard. So are great successes made by men able to detect the shift in public favor from one industry to another.

Now another change is taking place. An old established industry—an integral and important part of the nation's structure—in which millions of dollars change hands every year—is in thousands of cases being replaced by a truly astonishing, simple invention which does the work better—more reliably—AND AT A COST OFTEN AS LOW AS 2% OF WHAT IS ORDINARILY PAID! It has not required very long for men who have taken over the rights to this valuable invention to do a remarkable business, and show earnings which in these times are almost unheard of for the average man.

EARNINGS

One man in California earned over $1,600 per month for three months—close to $5,000 in 90 days' time. Another writes from Delaware—"Since I have been operating (just a little less than a month of actual selling) and not the full day at that, because I have been getting organized and had to spend at least half the day in the office; counting what I have sold outright and on trial, I have made just a little in excess of one thousand dollars profit for one month." A Connecticut man writes he has made $55.00 in a single day's time. Texas man nets over $300 in less than a week's time. Space does not permit mentioning here more than these few random cases. However, they are sufficient to indicate that the worthwhile future in this business is coupled with immediate earnings for the right kind of man. One man with us has already made over a thousand sales on which his earnings ran from $5 to $60 per sale and more. A great deal of this business was repeat business. Yet he had never done anything like this before coming with us. That is the kind of opportunity this business offers. The fact that this business has attracted to it such business men as former bankers, executives of businesses—men who demand only the highest type of opportunity and income—gives a fairly good picture of the kind of business this is. Our door is open, however, to the young man looking for the right field in which to make his start and develop his future.

Not a "Gadget"— Not a "Knick-Knack"—

but a valuable, proved device which has been sold successfully by business novices as well as seasoned veterans.

Make no mistake—this is no novelty—no flimsy creation which the inventor hopes to put on the market. You probably have seen nothing like it yet—perhaps never dreamed of the existence of such a device—yet it has already been used by corporations of outstanding prominence—by dealers of great corporations—by their branches—by doctors, newspapers, publishers—schools—hospitals, etc., etc., and by thousands of small business men. You don't have to convince a man that he should use an electric bulb to light his office instead of a gas lamp. Nor do you have to sell the same business man the idea that some day he may need something like this invention. The need is already there—the money is usually being spent right at that very moment—and the desirability of saving the greater part of this expense is obvious immediately.

Some of the Savings You Can Show

You walk into an office and put down before your prospect a letter from a sales organization showing that they did work in their own office for $11 which formerly could have cost them over $300. A building supply corporation pays one man $70, whereas the bill could have been for $2,600! An automobile dealer pays our representative $15, whereas the expense could have been over $1,000. A department store has expense of $88.60, possible cost if done outside the business being well over $2,000. And so on. We could not possibly list all cases here. These are just a few of the many actual cases which we place in your hands to work with. Practically every line of business and every section of the country is represented by these field reports which hammer across dazzling, convincing money-saving opportunities which hardly any business man can fail to understand.

Profits Typical of the Young, Growing Industry

Going into this business is not like selling something offered in every grocery, drug or department store. For instance, when you take a $7.50 order, $5.83 can be your share. On $1,500 worth of business, your share can be $1,167.00. The very least you get as your part of every dollar's worth of business you do is 67 cents—on ten dollars' worth $6.70, on a hundred dollars' worth $67.00—in other words two thirds of every order you get is yours. Not only on the first order—but on repeat orders—and you have the opportunity of earning an even larger percentage.

This Business Has Nothing to Do With House to House Canvassing

Nor do you have to know anything about high-pressure selling. "Selling" is unnecessary in the ordinary sense of the word. Instead of hammering away at the customer and trying to "force" a sale, you make a dignified, business-like call, leave the installation—whatever size the customer says he will accept—at our risk, let the customer sell himself after the device is in and working. This does away with the need for pressure on the customer—it eliminates the handicap of trying to get the money before the customer has really convinced himself 100%. You simply tell what you offer, showing proof of success in that customer's particular line of business. Then leave the invention without a dollar down. It starts working at once. In a few short days, the installation should actually produce enough cash money to pay for the deal, with profits above the investment coming in at the same time. You then call back, collect your money. Nothing is so convincing as our offer so let results speak for themselves without risk to the customer! While others fail to get even a hearing, our men are making sales running into the hundreds. They have received the attention of the largest firms in the country, and sold to the smallest businesses by the thousands.

No Money Need Be Risked

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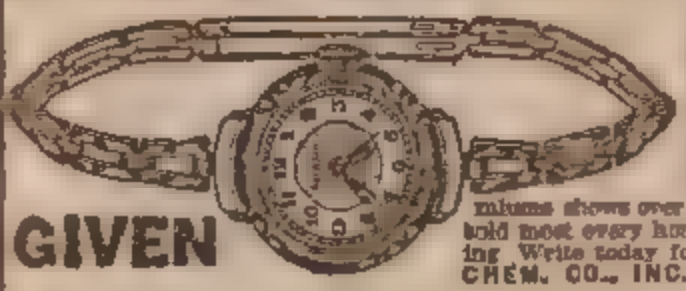

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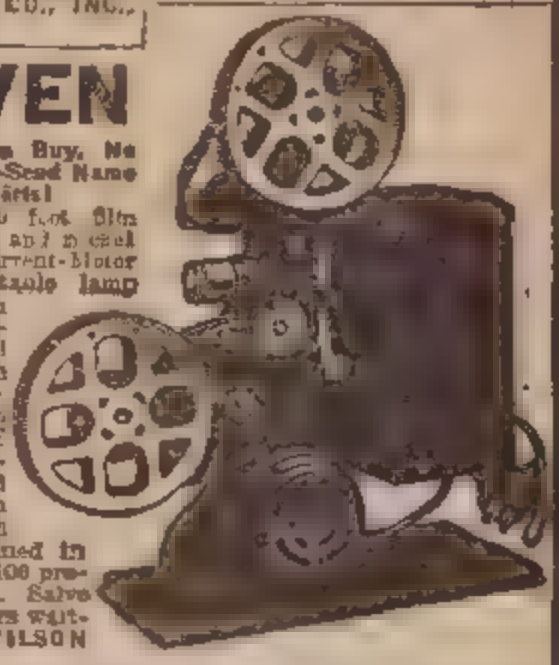

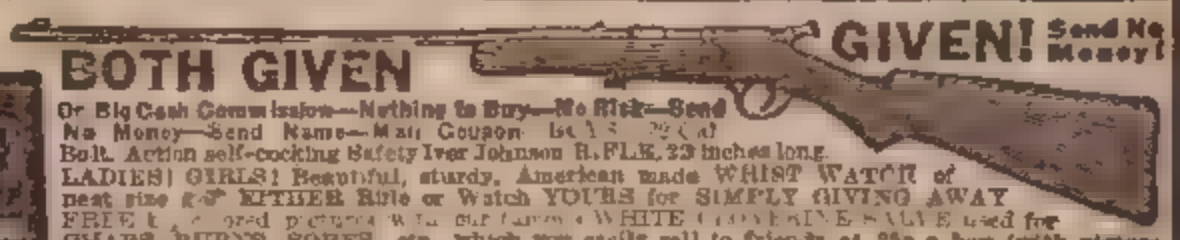

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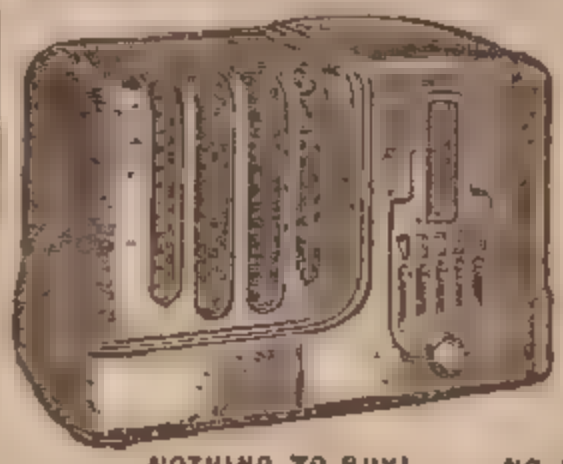

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Vol. 1, No. 2 STARTLING STORIES March, 1939

Why Science Fiction?

A Guest Editorial

By JOHN TAINE

FAMOUS SCIENTIFICTION NOVELIST

A MAGAZINE devoted to science fiction may seem a strange place to be serious about science and its urgent social significance. Yet, just because fiction does appeal to a wider audience than do the technical writings of professional scientists, a science fiction magazine is a proper place to be serious for a moment about science. For even the wildest story contains at least one grain of fact, and this fact may remain in the reader's consciousness, almost unknown to himself, long after the plot of the story and all its characters are forgotten.

In short, the beneficial medicine in the pill may continue doing its work when the sweet taste of the sugar coating has evaporated. Many readers who would shy away from a formal textbook on science may be induced through scientific fiction to tolerate science in their daily lives.

John Taine

When we tolerate anything, we "put up with it" or are at least not actively hostile to it, or "bear it," as when we grin and bear something, or just grin. Intolerance, neither grinning nor bearing, is usually founded in ignorance. When the ignorance is lightened with a little understanding, people stop gnashing their teeth over imaginary evils, and may even begin to smile tolerantly. It is very necessary for the preservation of civilized society at this moment that the public be brought to a sane tolerance of science. Science furthers the good, not the evil, of society.

Present readers of science fiction are already friendly to science. Their part in breaking down prejudice against science is simple. They can get some of their friends to read scientific stories for the sake of the story alone. If this is to be done, the stories must be written attractively enough for scientific outsiders to be interested in the stories as fiction. To take a famous example, R. L. Stevenson's *Dr. Jekyll and Mr. Hyde* has been read by thousands who never suspected that the story is scientific fiction, yet that is exactly what it is. If a writer of Stevenson's caliber found it not beneath his dignity to write scientific fiction, surely some of our present fiction writers need not be afraid of letting themselves or their guild down by following his example.

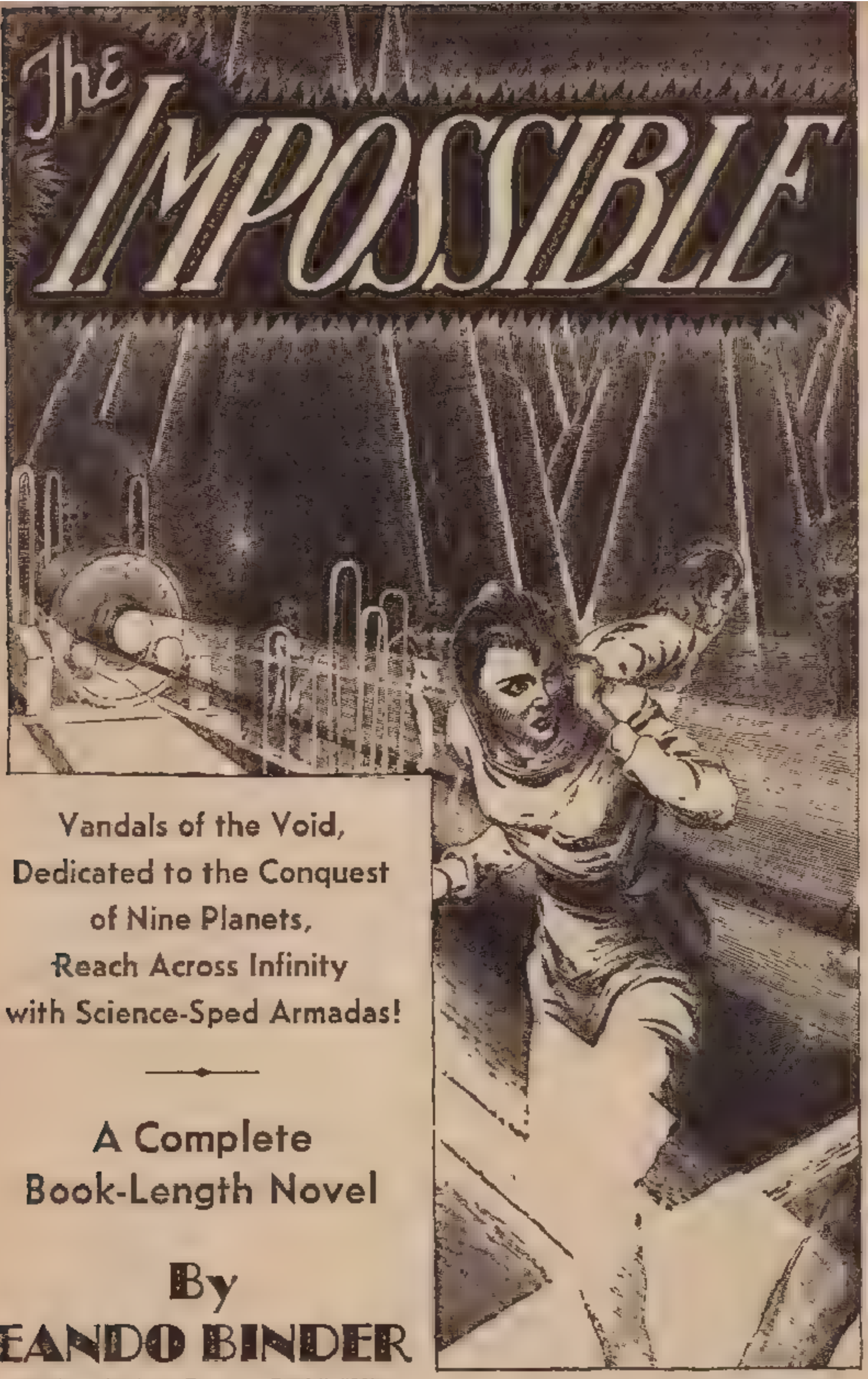
To sane men it is obvious that science has improved our living conditions far beyond what the most optimistic prophet of a hundred years ago would have thought possible. Unfortunately, however, entire nations are being led by men who fear and hate science because it contradicts their wishful fancies. In order to govern despotically, one must suppress impartial science. And it is being suppressed in some European countries today with a ferocity unequaled since the darkest Middle Ages.

In central Europe alone, over 1600 professional scientists have been expelled from their fatherlands or herded into concentration camps. We certainly do not wish the like to happen here.

The public must realize for its own good that science is well worth getting acquainted with.

Writers of scientific fiction need not preach, or even teach deliberately. If they tell a good story well, they will have done their bit.

The IMPOSSIBLE



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The aliens were

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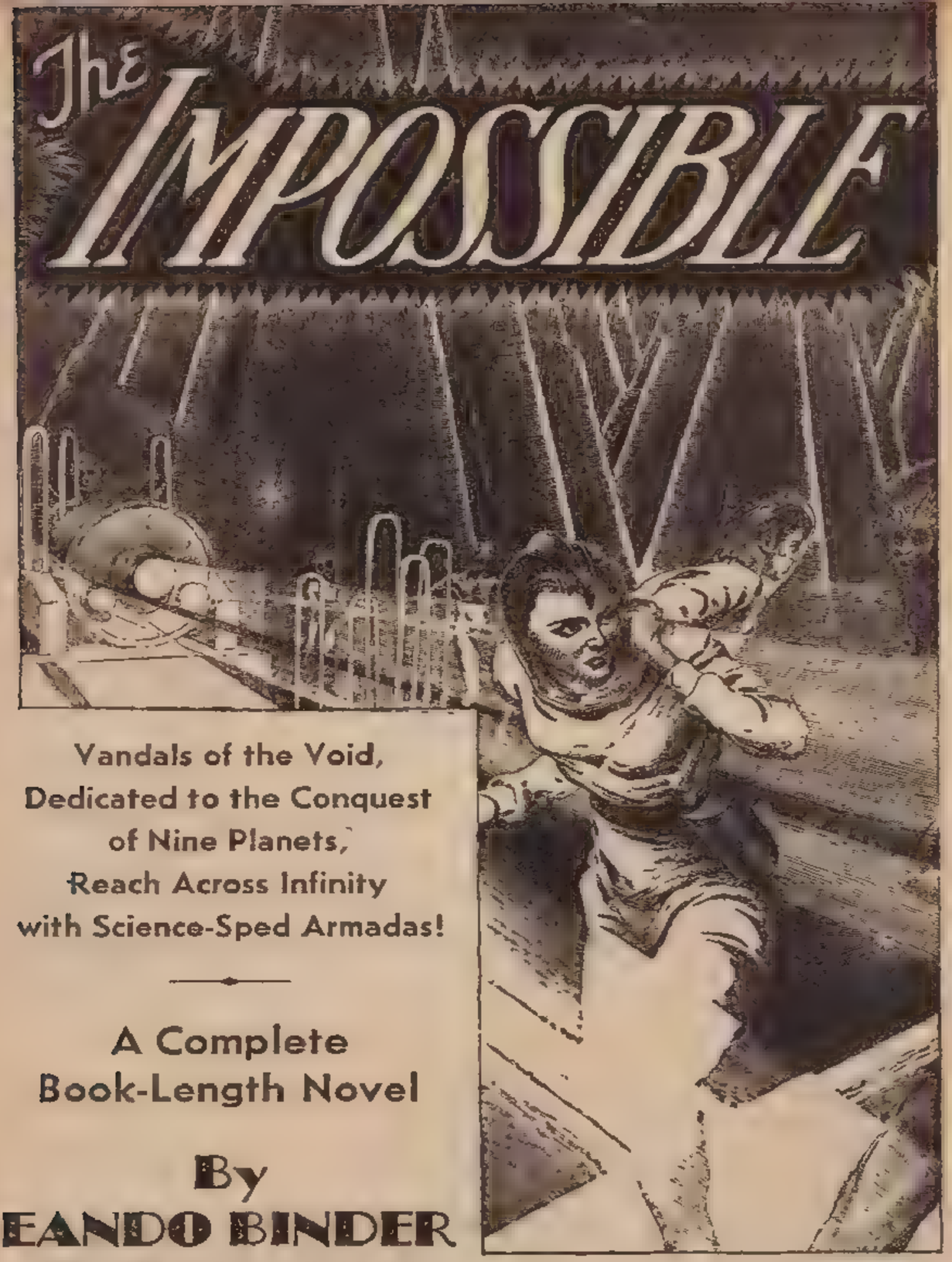

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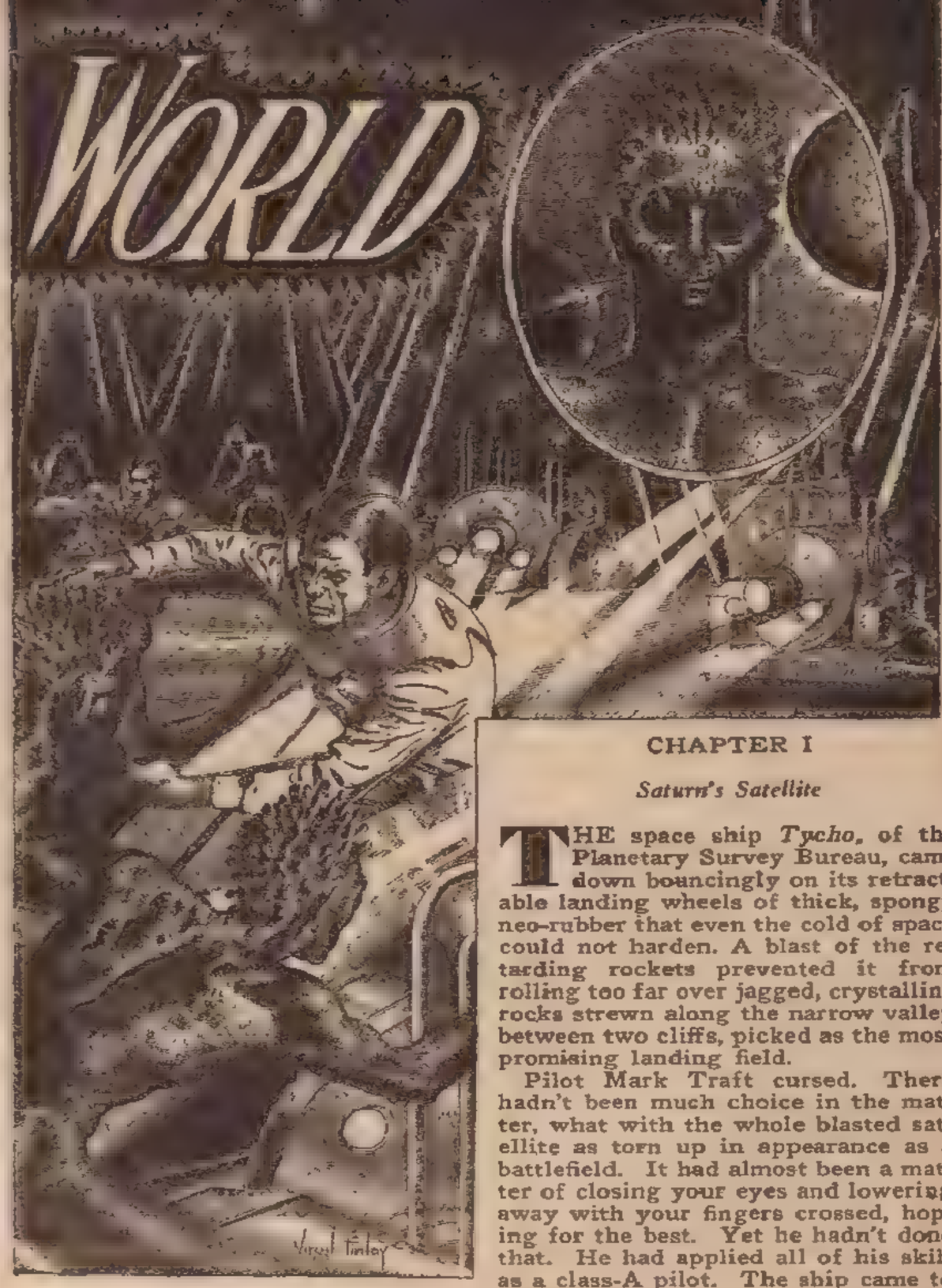
The aliens were projecting their cold force (Chapter IX)

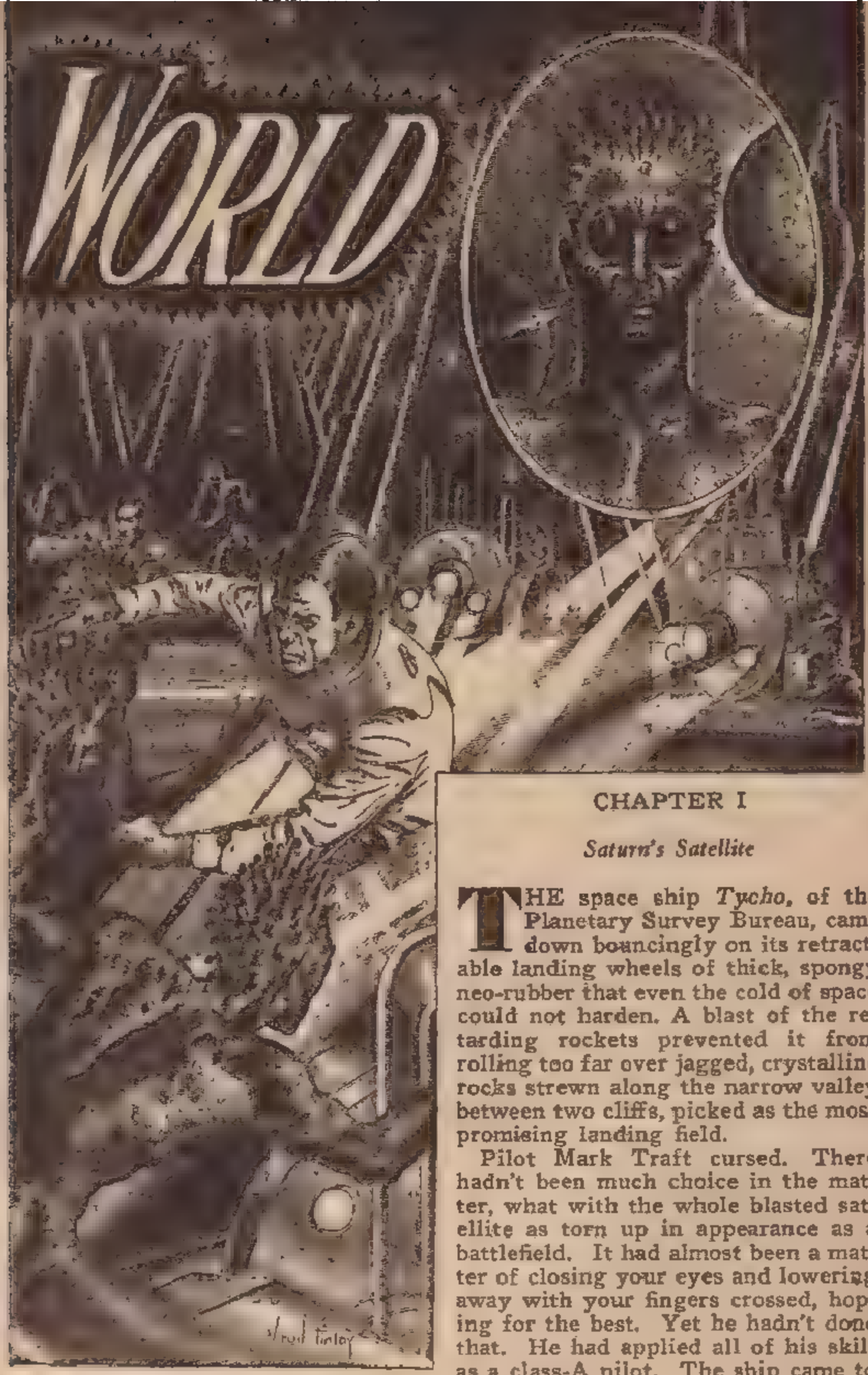


CHAPTER I

Saturn's Satellite

THE space ship *Tycho*, of the Planetary Survey Bureau, came down bouncingly on its retractable landing wheels of thick, spongy neo-rubber that even the cold of space could not harden. A blast of the retarding rockets prevented it from rolling too far over jagged, crystalline rocks strewn along the narrow valley between two cliffs, picked as the most promising landing field.

Pilot Mark Traft cursed. There hadn't been much choice in the matter, what with the whole blasted satellite as torn up in appearance as a battlefield. It had almost been a matter of closing your eyes and lowering away with your fingers crossed, hoping for the best. Yet he hadn't done that. He had applied all of his skill as a class-A pilot. The ship came to rest, safely.



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Unhooking the broad seat-straps, he came to his feet and rose to his full height of six-feet-five. He was proportionately as broad-shouldered, with great hands and powerful arms. Muscles bulged beneath his natty uniform.

Blond-haired, he was a reincarnated Viking in all aspects save one—his face. That, incongruously, had been stamped by Nature in a kindly, good-natured mold, and his complexion was as smoothly fair as a girl's, much to his secret disgust. Nor had he ever been able to raise a camouflaging mustache or, when he left off shaving for a time, more than a scraggly reddish beard.

He pressed his face against a flawless port plate of artificial diamond, looking out.

This was Iapetus, eighth moon of Saturn, revolving at a distance of 2,200,000 miles from its ringed primary. A bitter, isolated little world it obviously was, whose dawn was lit only by the feeble rays of a sun nine hundred million miles away.

Its atmosphere, he knew, was thin, frigid. Its gloomy surface, as much as he could see of it, was a jumbled, scaly waste of barren mineral plains and some few agelessly frozen lakes. It was a desolate scene; one to chill the eye and heart of a living observer.

YET Earthmen were about to carry their interplanetary exploits to this wayward member of the Solar System, in the year 2050 A.D., a hundred years after the advent of space travel. There was a thriving colony on Titan, largest moon of Saturn, two million miles away, and a fueling outpost on Rhea. Exploring ships had already touched on Iapetus and noted its rich beds of beryllium ore.

"Pretty deserted-looking place," commented Greeley, the co-pilot, also unstrapping himself. He stood six feet, but was dwarfed by the gigantic Traft. He went on, his eyes rather bleak: "Not much of the disease of life, as the poets put it, here. Not even insects!"

"There's some plant life—looks like moss," commented Traft. "Evolution barely got a start here!"

Back of them, the rest of the ship's list of ten men were making similar observations. Somehow, the less of life a world displayed, the more inhospitable it appeared. Even a hotbed of horrible monsters would have been p r e f e r a b l e to this stony, barren stretch.

"However, we'll go out armed," said Captain Harvey, commander of the expedition.

As a wise and experienced leader in the Survey Service, he knew that on alien worlds unknown dangers oftentimes lurked just beyond one's nose.

"Men"—he addressed the whole group—"you know what we're here for. Survey of mineral deposits. All previous expeditions, in the past few years, reported extensive beryllium ores. That makes this satellite a sort of treasure-chest."

He waved his arms as though indicating mountainous heaps of wealth. True, in a sense, for beryllium, forming the lightest and strongest of alloys, had become the most useful metal in that age of interplanetary travel.

"The Mineral Exploitation Bureau," he went on, "would have come around to it sooner, except that this satellite is so damnably far out of the way. As it stands, Saturn is the practical outpost of present-day earthly traffic in the Solar System. And Iapetus here, being so remote from the primary, is about the farthest frontier so far achieved. But now that Titan and Rhea have good fueling stations and docks for ore freighters, Iapetus is ripe for the plucking. Man is bringing another world to his doorstep!"

HE glanced around, knowing that all the men felt the inner glow that comes to the explorer who realizes he is the first of a cavalcade of settlers, workers and builders, who will come later on.

"For the survey work," the captain went on, "you are all under the orders of Hugh Benning, our mineralogist. And now we'll get into vac-suits and venture out. All except Traft and Greeley. You two will remain within

the ship, as guard."

The rest of the men struggled into their vac-suits of neo-rubber. The two pilots helped them clamp the neck fittings of their helmets and clipped oxygen bottles to their belts.

"By the way, Captain Harvey," Hugh Benning said, "this atmosphere has always been reported breathable, by other expeditions. Cold and thin, of course, but fresh and pleasant. No harmful effects after an hour."

"I know," the captain nodded. "We'll try it later, but only after a volunteer has breathed it for fifteen minutes before the rest do. Get that, men? Keep your helmets closed until I give the word!"

Finally the eight vac-suited figures clumped out with their lead-weighted shoes and the air-lock hissed shut behind them. Traft and Greeley watched half enviously as their companions wandered about outside, enjoying the feeling of freedom, after the cramped quarters of the cabin. That was always a thrill to space voyagers.

A few minutes later Benning, evidently having volunteered to try the air, was seen to unfasten the slit covering that allowed the outside air to reach his lungs. His suit promptly deflated, as the outside pressure was greatly lower. He turned off his oxygen bottle, subsisting entirely by the satellite's atmosphere. A normal man, avoiding exertion, could breathe such stratosphere-thin air for a limited period of time without ill effects.

"Bet that air has a bite to it," Traft shivered, glancing at the thermo-scale that showed the outside temperature at minus 102 degrees. The overhead, midget sun did little to dispel such cold. "But of course he has the nose tube warming coils taking most of the chill out."

"Lucky guy!" sighed Greeley. "Bottled air always tastes so stale after a few hours."

A click sounded in the stillness of the ship. Traft was training a small, compact camera—a marvel of perfection that took colored pictures under almost any conditions — out of the port, snapping the outside scenery.

"A candid camera fiend, if there ever was one," Greeley said, grinning. "The breed hasn't died out in a hundred years."

"It's a great hobby," said Traft simply. "I have pictures taken on ten worlds, and I'm proud of the collection."

The group outside strode to the top of a low hillock overlooking the surrounding territory. Benning kneeled suddenly, grabbing up handsful of coarse soil to peer at it closely. He seemed startled and was evidently telling the others what a fortune in ore lay at hand.

"It's a wonder private interests haven't been here," Traft reflected aloud, "to sneak away a few million dollars' worth, as they did on Callisto. Remember that case, some years ago? They got away with a fortune in radium ore before Government exploitation moved in."

Captain Harvey's deep voice issued startlingly from the radio speaker, kept open and tuned to his helmet radio.

"TRAFT," called the captain, "we are making our way to the nearest cliff, at the right. Benning suggests the richest deposits may be there. We are all breathing the air now. Very sweet and fresh. Keep the radio open."

"Aye, sir!" said Traft.

Then he and Greeley, from the aft port, watched the party move toward the sharp, upflung cliff to the right from the ship's nose. They could make out the cliff's details easily, no more than a quarter-mile away. At the base of it showed the black, uneven cut-out of a natural cave leading into the solid rock. Anemic sunlight failed to penetrate within its depths.

The exploring party had seen the cave, too. They were approaching it, with the curiosity that all men have for the mysterious. Guns up in instinctive wariness, they clambered to its mouth and peered in. Benning climbed to a flat, overhanging lip for a closer look.

To the two watching pilots there was no thought of danger. A deserted world, uninhabited by inimical life-

Rodney Shelton

forms, could offer little uncertainty. Their stay on Iapetus promised to be as routine and safe as on the more well known planets.

And then it came!

They saw the men out there stagger drunkenly, then start to stumble toward the ship, fumbling at their open visors. Their movements were stiff, awkward.

"Something's happened!" gasped Greeley in startled alarm.

Traft, moving with tigerish swiftness for all of his size, was already at the radio, shouting into it.

"Captain Harvey! What's wrong? What—"

"Something — freezing — choking us!" came back the captain's hoarse tones. And more weakly: "Gas—cold —in the air! Traft, Greeley—help!"

The voice died away in a strangling moan. The men were dropping now, one after another, bouncing like rubber balls in the light gravity. They twisted convulsively. Traft and Greeley glanced at one another for an instant of horrified wonder.

"Vac-suits!" roared Traft, whirling to the rear supply compartment.

They fairly dived into their vac-suits, snapped the oxygen valves, and entered the lock. They plunged from it a moment later and bounded for the fallen men. Exerting full muscular effort in the reduced gravity, they were able to cover the quarter-mile in less than a minute. The fallen men were lying still now, with eyes closed behind their visors.

Traft knelt at the side of Captain Harvey and quickly unstrapped his leaden shoe weights. He did the same for another, then picked up the limp bodies, one under each arm. He was still able to run faster than he could have on Earth, carrying nothing but his own weight. Greeley followed with two more of the stricken men.

They made another hurried trip, but Greeley came back with only one man. Inside the cabin he hastily unfastened his visor. "Benning is missing!" he shouted at Traft. "He must have fallen into the cave mouth!"

Traft nodded grimly, grabbed up a hand flash and dashed out again. Greeley wriggled out of his vac-suit and began stripping the others.

TRAFT returned in a few minutes, his face strained. "Benning is lost!" he announced with a note of finality. "That cave is a monstrous place, full of pits that haven't any visible bottom." He shrugged, not with indifference, but with hopelessness.

"Good Lord!" groaned the co-pilot. But he was staring numbly at the bodies of the rescued men. "They aren't even breathing! They're d—" He gulped, unable to bring the word out.

"Not necessarily!" snapped Traft, though his eyes held the daze of shock. "They were exposed only a short time to whatever was in the air. People don't die so suddenly, even when their hearts stop beating and their lungs collapse. They found that out back in the Twentieth Century. We've got to hurry, though. Slip an oxygen mask over their faces and pump their diaphragms like you would for a drowned person. Come on, we've got work to do."

They labored like slaves at this, changing from one limp form to another, hoping to revive them all. But no signs of returning life rewarded them. No color came to the faces that

seemed drained of all blood. The clammy fingers of fear gripped their hearts.

Gradually the hopelessness of it stole into their minds, but they doggedly continued their efforts, unwilling to admit defeat. Several hours later, dog-weary and with aching muscles, they stared at one another pantingly.

"They're dead!" Greeley declared, shudderingly. His voice held a grating edge from frayed nerves.

Traft looked haggard. But his eyes were puzzled. He raised the arm of one of the limp forms. Then he released it. The arm dropped back loosely.

"No *rigor mortis!*" he whispered hoarsely.

"What do you mean?" gasped Greeley.

The giant pilot sprang up. "This is a case for the Extra-Terra Bio-Institute!" Sudden resolve flared in his eyes. "The sooner we get there, the better. We'll refuel at Titan and head for Earth."

"What good will that do?" moaned Greeley. "It'll take at least four or five days to get there. By that time they'll be dead for sure, if they aren't already."

"Maybe they aren't—and won't be!"

Traft stared down at the bodies queerly, trying to tell himself he was mad for the thought. Yet his pulses hammered with an insistent hope that he might be right. He leaped for the pilot seat.

As Iapetus receded from their thundering rockets Traft set a course for the tiny disc of Titan near the sweeping curve of Saturn's rings. He found it easier to stare out at the star-peppered firmament than back at the seven still figures strapped in their bunks. And the thought of Benning, lying broken at the bottom of some measureless pit—

The big pilot had not led a particularly tranquil life, in his adventurous calling, but this disastrous episode numbed him to the core. Especially the mystery of it. What strange gas had suddenly appeared in Iapetus' atmosphere? Did it spell some strange

The Space Scientist

menace, natural or—otherwise?

Traft shuddered a little. Somehow, it struck him as full of sinister promise, this amazing event.

CHAPTER II

The Institute of Bio-Magic

FROM the highest tower of ETBI, situated on Long Island, the view was magnificent. Far to the west could be seen the spires of Manhattan, Earth's largest and busiest city, the beating heart of man's empire in the skies. Closer, on Long Island itself, lay Tellus Space Port, with its gigantic drome and hangars and its widespread landing field.

Great liners and freighters rocketed up and thundered down constantly. The bull roars of their powerful engines could be heard as a steady low undertone, like the beating of an endless surf.

"The crossroads of space meet there!" murmured Dr. Rodney Shelton to his laboratory assistant, Myra Benning. She nodded.

It was a scene to inspire that thought, as the docks and quays of old

London, a century before, had been the crossroads of the high seas. All the rich and varied commerce of other worlds centered at this hub of the Solar Empire. Not a day passed but what new treasure came out of the void—precious and useful metals, priceless jewels, exotic food stuffs rare or unknown to Earth. This besides the steady dealing in Venusian grains and meats, and the Martian manufactures.

At times, the breath of adventure wafted from the spaceways—tales of hidden lands on alien worlds, fabulous creatures and heroic deeds. In that sense it was like the Venice of the Middle Ages, with its early reachings into Cathay and India and the mysterious South Seas. Only here it was the traversing of etheric trails to Mars and Ganymede and Rhea.

And there was a frontier—Saturn—beyond which organized enterprise had not yet advanced. It was a mixture of the prosaic and romantic, as with all such pioneering periods, and no one could say what the morrow might bring.

The two watchers from the tower drank in the scene, finding a moment of relaxation from their intense laboratory routine below.

Dr. Rodney Shelton was under thirty and over six feet, as lithely built as an athlete. One noticed his strong chin, firm lips and straight nose, but mostly his eyes. They were the steady, calm gray eyes of the dreamer and thinker, but in their depths lurked a certain quality, keenly alive, that marked him a man of action when the occasion demanded.

He did not look, outwardly, the scientist he was. But the wrinkles of concentration could appear in an instant on his forehead, when the brain behind it delved into a knotty problem.

Beside him, Myra Benning was wholly feminine, despite her shapeless laboratory smock and the lack of cosmetic artifices. She had the natural beauty equipment of pert nose, gold-sheen hair and soft blue eyes. But more than that, she had a mind, and a corresponding ambition to utilize it. She had chosen science as a career.

Suddenly both looked up, startled, as the shrill blast of sirens sounded from the direction of Tellus Space Port. The sirens were seldom used. It meant an emergency of some kind. Sometimes crippled ships, for instance, needed the port cleared for a dangerous landing.

Dr. Shelton and Myra could see ships hastily wheeling away, postponing take-off. One small freighter, about to settle for a landing, nosed up again with a revved blast of its under tubes, to circle and await its time.

A FEW minutes later the cause of the disturbance appeared—a long, torpedo-shaped craft that dropped almost precipitately from the clouds. Steam hissed from a hull that had been heated by rapid descent through Earth's air envelope. The under tubes flamed a cherry red, smoothing the fall, but the ship landed bouncingly on its undercarriage and rolled forward a hundred yards before retarding blasts halted it. Then the volcanic throb of its engines ceased, abruptly.

The air-lock of the landed craft jerked open. Hurrying officials from the drome met the flyers coming out. Excitement pulsed in the air. To Rodney Shelton and his companion, it was like a play being enacted on a faraway stage. The figures were tiny toys.

"Wonder what that's all about?" mused the man. "They've come from somewhere in a big hurry." He leaned forward, straining his eyes. "Looks like an exploration ship, by the size of its fuel hold. Can't make out the name."

"Exploration ship!" Myra Benning caught her breath. "My brother Hugh is with the *Tycho*—" She shook her head. "But that isn't due back for three weeks yet. It wouldn't be Hugh's ship."

She glanced at her wristwatch. "We've been up here a half hour," she stated crisply. "I think we'd better go down now, Dr. Shelton."

"You're like the voice of my conscience," the man grinned. "But you're

right—back to work!"

They left the tower to descend to their laboratory.

The builders of the New York World's Fair of 1939 had called it the "World of Tomorrow." They would have been utterly amazed, however, to see what reared on those same grounds a century later.

To the eye, it was simply a group of giant, windowless buildings; the conditioning chambers of ETBI—Extra-Terra Bio-Institute. But within them, in sealed cubicles, were a hundred varieties of temperature, pressure, lighting, and the other strange conditions of extra-terrestrial environments. It was a large-scale biological project that had meant much in Earth's colonization of the planets.

One building was devoted solely to Martian conditioning. Men and women emerged from there with bodies whose metabolism was suited perfectly to Martian environment, with its utterly dry, wispy air, freezing climate, and light gravity. They were taken to Mars in specially conditioned space ships, a steady stream of them.

Mars had been the first to be colonized. Already the resident population of Earth people on the Red Planet was over five million. A dozen industries thrived there. Beautiful ceramics from Martian clay were much in demand on Earth. And the exquisitely fine cloths from Martian spider webs.

Another building conditioned colonists to withstand the torrid dampness of Venus, ten times as trying to humans as the hottest jungles of Africa or South America. These people reaped tremendous harvests of the Cloudy Planet's boundless fertility. Crops ripened in a short month in the hot, steamy plains that stretched endlessly under veiled skies. Imported grains from Earth grew in riotous abundance. More than half of Earth's staple food supplies came from the rich farms of Venus.

ALL this would have been impossible to normal, unconditioned Earth people. They would have had to labor in sealed suits against adverse environment, with all the insurmountable handicaps of such methods. But with people whose metabolism had been altered to fit the new conditions, they lived and breathed as freely as though born on those planets.

Mark Traft

But how had human metabolism, the stabilized result of millions of years of evolution on Earth, been changed? In the final analysis, it all centered about the use of one remarkable product of biological science, developed twenty-five years before.

It was called, for the press and public, just "adaptene," but only the most trusted officials of the Institute knew what it was by formula. By its very nature, it had to be shrouded in secrecy and kept from the hands of unscrupulous individuals. The Earth Union Government controlled exclusively the manufacture and use of adaptene.

Adaptene was the parent substance of all hormones in the living body. It controlled all metabolism, and therefore all the body processes to the last one.

Most remarkable of the applications of this near-miraculous substance had been the conquest of Jupiter's inimical environment. It had seemed impossible at first. At Jupiter's surface was a crushing gravity, almost three

times that of Earth, that made human bones and muscles crack in a few hours.

A moisture-choked heat, from the Titanic layers of pressing gases, promised constantly parched throats and slowly boiling skin. Worst of all, the atmosphere itself was laden with gases, besides oxygen, never meant for earthly lungs—methane, ammonia, and even traces of searing bromine that exuded from volcanic sources and gave the whole atmosphere its brownish tinge.

The natural life-forms of Jupiter's wild environment were adapted by millions of years of evolution. How could Earthmen, nurtured in a gentler climate, meet that terrible challenge?

It was tried. A series of conditioning rooms had been prepared, with successively greater air pressure, heat and foreign gases. In a way, it was like the Twentieth Century compression chambers, which had been used to prepare divers for the great pressures under the sea. Three Earthmen, given strong doses of adaptene, had gone from chamber to chamber. Leaden suits were prepared for them and weight added day by day. Their metabolism had faithfully undergone the necessary changes!

At the end of three months, they had reached the final conditioning room, which practically duplicated Jupiter's conditions. Their skins had become tough and heat-resisting. Their lungs filtered out methane, ammonia and bromine automatically, retaining only the necessary oxygen. Their muscles, motivated by superactive adrenalin, easily supported five hundred pounds of weight without tiring. All this through the magic touch of adaptene, working in its mysterious way throughout every cell and vein.

The men had been sent to Jupiter. One of them succumbed to the continued harshness of life there, but the other two survived. With this proof of success, other men were bio-conditioned, and soon a settlement was founded and work begun to extract the chemical riches of Jupiter's soil.

Now, in 2050 A.D., bio-conditioned Earthmen were to be found on ten different worlds of the Solar System—Mercury, Venus, Mars, Jupiter, Io, Europa, Ganymede, Callisto, Saturn and Titan. Adaptene had burst the former bonds of the narrow range of conditions under which the human body could survive.

It did not matter whether the atmosphere was thin or thick, whether life-supporting oxygen was scarce or overabundant, whether frigid cold or suffocating heat existed, whether the force of gravity was weak or bruisingly powerful—adaptene made metabolic corrections for all variations.

They were still humans, these made-over colonists on other worlds. Science had changed their bodies somewhat, but not their minds. They lived and loved and worked in alien surroundings with as much of the measure of well being and happiness as came to Earth-living humans. Their children were easily bio-conditioned from birth onward by adaptene. It was only the start, but colonization was rapidly gaining momentum toward a great empire in which Earth people lived on all the worlds of the Solar System—by the virtue of adaptene.

ETBI, where the bio-conditioning was carried on, was a separate branch of the Earth Union Government, along with the Space Navy, Interplanetary Exploration and Planetary Survey Bureaus. The exploitation of space was a highly organized process.

First the ships of the exploration service mapped and explored, on any new world. Then the Planetary Survey experts tabulated all raw resources, mineral and otherwise. The Space Navy stepped in next, to establish outposts and fueling stations.

Finally ETBI sent its tailored, permanent colonists to dig in and develop the planet. And a new world had been added to man's growing roster!

CHAPTER III

Mystery from the Spaceways

THE heart of Extra-Terra Bio-Institute was its controlling labora-

tory system, whose activities ran the entire scale of science. Its staff numbered thousands. Its facilities were ultra-modern. It was the clearing house of all data brought back from the spaceways. On file was every conceivable bit of information relating to extra-terrestrial matters.

The head of ETBI was a cabinet member of the Earth Union Government. Second in command was Dr. Rodney Shelton, youngest and most brilliant of the scientific staff.

His career had been studded with vital researches. Even before coming to ETBI, his graduation thesis as a student had settled once and for all the virus-enigma, unsolved for a century. He proved that the viruses were molecular life-forms, the link between mineral and living states. Thus tagged, all virus diseases were curable, including the common "cold," by treating them with artificial anti-virus molecules, as though they were simply chemical reagents.

But, joining the staff of ETBI, Shelton had turned his attention to the mysteries of extra-terrestrial biology. He had been with the famed Venus Swampland Expedition, commissioned to study the terrible brain-softening plague that periodically swept out from the swamplands to wipe out whole communities of Earth settlers.

Isolating the germ, Shelton had studied it at great risk alone—at his own insistence. He passed out his notes from a sealed-off cubicle of the ship. He lived in a sealed suit and did not dare eat or drink. In a week, he came out, thin and weak, but happy—with the answer.

The brain-softening bacteria died promptly in blue light, unknown on Venus because of its cloud-packed skies that filtered out all blue radiation. Thereafter, all Earth settlements were simply protected, when the plague reared, by rings of blue searchlights.

On Mercury, Shelton had found a much simpler way of stopping the voracious hordes of omnivorous, two-foot amoeboids than by blasting them to pieces with small cannon. No poison could affect them. Small gelatin capsules containing solid carbon dioxide were strewn in their stampeding path. The giant single-celled monsters absorbed them, dissolved off the gelatin, and swiftly puffed up into porous balloons by the action of released gas. In this form, they were whisked into the sky by the stiff winds, like bubbles, and eventually dashed to smears against rocks and cliffs.

Myra Benning

But on Mars, Shelton had met, and conquered, the most baffling problem of them all. What could one do against invisible swarms of spongy germs that roamed the wastes of that planet and soaked up every last particle of water, to convert it into more spongy germs? The least exposure of a water supply would let them in, to fill it with their multiplying legions.

Shelton impregnated the normal water with one per cent of heavy-water, easily manufactured on Earth from deuterium, "heavy" isotopic hydrogen, and oxygen. By Mendelian principles, applicable to all life, whether on Earth, Mars or Andromeda, the hundredth or so generation of the sponge-germs were unable to breed.

Shelton remembered that back in the 1930's the law had been laid down that heavy water inhibited reproductive processes. The sponge germ ceased to

peril the water supplies of Earth colonists.

BUT in the past three years, Shelton's responsibilities had been shifted entirely to the most important of ETBI's activities—the bio-conditioning. He was one of the trusted few who knew the chemical formula of adaptene, and was always in complete charge of every new bio-conditioning venture engaged in by ETBI.

Before his transfer to that project, bio-conditioning had been clumsy, taking months. Shelton's researches enabled the process to be cut down to weeks. He had thereby tripled the colonization rate of the other bodies of the System. . . .

"Well, the conditioning of men for Rhea is about done," said Shelton, in relief. He and his assistant were in their laboratory, after having seen the excitement of an emergency landing at the port. "Another score for ETBI, and for adaptene! It's laboratory evolution, in a way!"

"Yes, Dr. Shelton."

Myra Benning slipped microscope slides into a cleansing bath of alcohol. Surreptitiously, however, she was watching his face. It was an interesting face to watch, with its glow of inspired feelings. It was the face of a leader and organizer, one whose mark would be left in the history of man's conquest of space. But to Myra Benning, it was also just the face of—a man.

"Let's see"—Shelton was counting on his fingers—"that's the eleventh world outside of Earth to which ETBI has sent its graduates. Iapetus will be next, to make it an even dozen. That will be soon now." His eyes glowed, as one who envisions ever greater horizons. "Exploring and mineral survey have gone on for several years. They'll want bio-conditioned men soon, when the Navy has established an outpost. It's like clockwork! World after world!"

The opti-phone bell rang.

Shelton snapped the "on" stud. The bewhiskered, jowled face of Grant Beatty, director of ETBI, flashed on the milky screen. One of the six men who, under the Earth Union's president, ruled the spaceways, his forceful personality reflected from a habitually grave face. Iron-gray hair framed his piercing eyes and thin, firm lips. But his expression was more than just grave at the moment; it was tense.

"Shelton," he barked out of the speaker, "drop whatever you're doing. Something vital has just come up. We've got an assignment that sounds more important than anything we've tackled before. The space ship *Tycho* just docked, emergency landing."

"The exploration ship?" queried Shelton, glancing at his assistant to see her head swing up sharply. "The one that went to Saturn for an official survey of Iapetus ore?"

"That's it!" corroborated the director. He went on slowly, biting off the words incisively: "It's back with only two men alive out of ten!"

Myra Benning's hand went to her throat, but she said nothing. Shelton had to admire the way she waited calmly for the rest, though her own brother might be one of the victims.

Shelton was shaking his head. It always hurt to hear of brave men meeting doom out in the spaceways—young, spirited men who had much to live for. Some of them were important, too; scientists, technicians. Now they were martyrs to mankind's steady march toward complete dominion of the Solar System.

"TWO alive and the rest dead!" Shelton muttered. "On Iapetus—the next colony world on our list. What happened up there on Iapetus?" He shrank from asking which men were dead, with Myra Benning's horrified eyes on him.

"No, not dead!" boomed Director Beatty, going back to the first thing Shelton had said.

Shelton stared. "But you just said that there were only two alive—"

"Yes, but the others are not dead!" Beatty insisted. "I had a look at the bodies. They aren't alive; they aren't dead!" His eyes looked shocked, as though he had seen the incredible. "And that's our job, Shelton; finding out what it means. Come to the hos-

pital ward at once. The bodies have been brought here."

"I'll be over in a moment." Shelton switched off the phone. "Steady now!" he said to the girl.

He slipped off his stained smock and wrestled into his coat. As he stepped to the door, he found her waiting to go along.

"You'd better stay," he admonished gently.

"I must go," she insisted nervously. "No matter what it means, if Hugh's one of them, I must see him!"

Shelton nodded. They stepped out into the hall and wound their way through the busy corridors, arriving at their destination a few minutes later. The hospital ward, in which ailing men from the bio-conditioning process were looked after, was spacious and modern, second to none on Earth.

Director Beatty greeted Shelton, a scowl of worry on his face. A physician with a stethoscope and puzzled eyes was going over the bodies, lying in a row of beds. One of the two men who had come back alive from Iapetus stood at one side, haggard from days of sleepless driving across space. But his eyes lighted up suddenly.

"Rod! Rodney Shelton!" he exclaimed, striding forward eagerly. "My old roommate at Edison College! Remember me?"

Shelton stared at the gigantic young man blankly for a moment.

"Mark Traft!" he cried, in recognition, a broad grin spreading over his face.

"Pilot Mark Traft!" informed the tall man. "In the Planetary Survey. I went to the training docks, when we graduated. I remember you went back for research. I'd heard you were here at ETBI, but never had the chance to drop in. You're a sight for sore eyes, Rod."

They stared at each other for a moment, their minds crowding with renewed memories of college days.

"Good to see you again, Mark!" Shelton remarked. "But we'll talk later. Right now—"

He turned to watch Myra Benning. Her eyes had flicked over the seven still figures. She had stood stiffly, then, breathing hard. Now she ran up and grasped the big pilot's arm, squeezed with frantic fingers.

"My brother—Hugh Benning!" she cried. "Another man came back alive! Was it Hugh?"

Traft's face instantly became sorrowful.

"No, Miss Benning," he said softly. "One man was lost on Iapetus—"

He shifted his feet awkwardly, tried to go on, but the words stuck. The girl's eyes dilated. Her lips trembled. Shelton wished the news had been broken to her less abruptly, but it was too late now.

"HUGH—" she choked. But suddenly she straightened up, shaking herself slightly. "I'm all right," she said firmly. "Tell me what happened up there on Iapetus—about Hugh."

As briefly and sympathetically as he could Traft gave the details to Shelton and the girl.

"Seeing we couldn't revive them ourselves," he concluded, "we decided to get the men to ETBI as soon as possible. We refueled at Titan, took on two men as engine crew, and ripped for Earth, triple-acceleration all the way." He waved a hand. "Here we are. Greeley, my co-pilot, went to report to our superiors. I came here with the bodies. I had a hunch all along they weren't—dead!"

Shelton stepped to the nearest bedside, touched a hand to the forehead of the still man who lay there.

"Cold!" he whispered. "Cold as death!"

The examining physician straightened.

"Medically," he pronounced, "they are dead! They don't breathe, their hearts have stopped, and their blood has cooled. Yet there is no *rigor mortis!*"

To demonstrate, he raised a limp arm of one of the men and let it fall. There was no stiffness apparent.

"Well, what's your final diagnosis?" demanded Director Beatty impatiently.

"Death, without *rigor mortis!*" returned the physician stubbornly. "That is, academically."

The director grunted. "What would you call it, Shelton?"

"Suspended animation!" Shelton replied reluctantly. "The first clear case in medical history. It means arrested life processes, without decomposition. Zero metabolism!"

He looked at the bodies as though still unwilling to believe.

"Suspended animation!" muttered Director Beatty, though he had not been surprised. "All right, revive them," he ordered the physician. "Get the whole staff on the job, if you have to."

"I don't think ordinary methods are going to work!" said Shelton grimly. "However, let them try."

The ordinary methods did fail. They knew, an hour later, that such methods were futile. Even an injection of adrenalin directly into the heart of one of the men had failed to start the slightest flutter of pulse. Director Beatty became the picture of baffled dismay.

"We've got to revive those men!" he ground out finally. "The reputation of ETBI is at stake. You're the best damned biologist on Earth today, Shelton"—he spoke challengingly—"and we're up against the best damned problem that's reared out of the spaceways yet. I'm putting you in complete charge. If it takes a day or a year, get these men up and around!"

"I think adaptene is the answer!" Shelton exclaimed, and went on rapidly to explain: "In a sense, these bodies have been thrown into an evironment without air, heat, or any of the normal things. They're 'adapted' to those extreme conditions. We can adapt them right back to ours!"

Director Beatty nodded. "Try it!" he said, and left. Other pressing duties claimed his attention.

WHEN he had sent the worn-out Traft for a rest Shelton called the hospital staff and gave them orders. The group galvanized into action. In a few minutes the seven limp forms were in combination fever machines and iron lungs. Small doses of the miracle substance, adaptene, were injected. It remained to be seen whether it could bring metabolism up from a zero point as well as simply shift it in degree.

"This *must* work!" Shelton said hopefully to Myra. "But it'll probably be a wait of hours."

He saw her red-rimmed eyes and suggested she take a rest.

"No." She shook her head, and went on tonelessly: "There's more work to do. I'll help you."

The puzzle of it all cropped to the fore in Shelton's mind. "Just what caused the suspended animation?" he murmured. "What queer, unknown gas—at least they spoke of gas. Is it in the Iapetus air? I wish I knew, but Traft forgot to bring back a sample, in all the excitement." His eyes suddenly lit with a thought. "There's one man who might know—the Space Scientist!"

He whirled and strode toward the Institute's main opti-phone exchange room, beckoning the girl to follow.

"The Space Scientist!" she reiterated in astonishment. "Do you know him—talk to him?"

"I did once," Shelton said shortly.

CHAPTER IV

The Space Scientist

IN the exchange room, the half-dozing male operators jerked to attention at sight of Shelton.

"Call long-distance radio central," Shelton ordered rapidly, "and have them send out a full-power call for the Space Scientist, on micro-wave Nine. When an answer comes, give me a private line."

"Yes, Dr. Shelton."

The attendant plugged in radio-central, the most powerful Earth radio station, whose services reached through the Heaviside Layer, on micro-waves, to every planet of the empire. Or to any ship in space.

"I only hope he decides to answer," Shelton muttered.

"From what I've heard of the Space Scientist," Myra Benning said, "'deigns' is the word!"

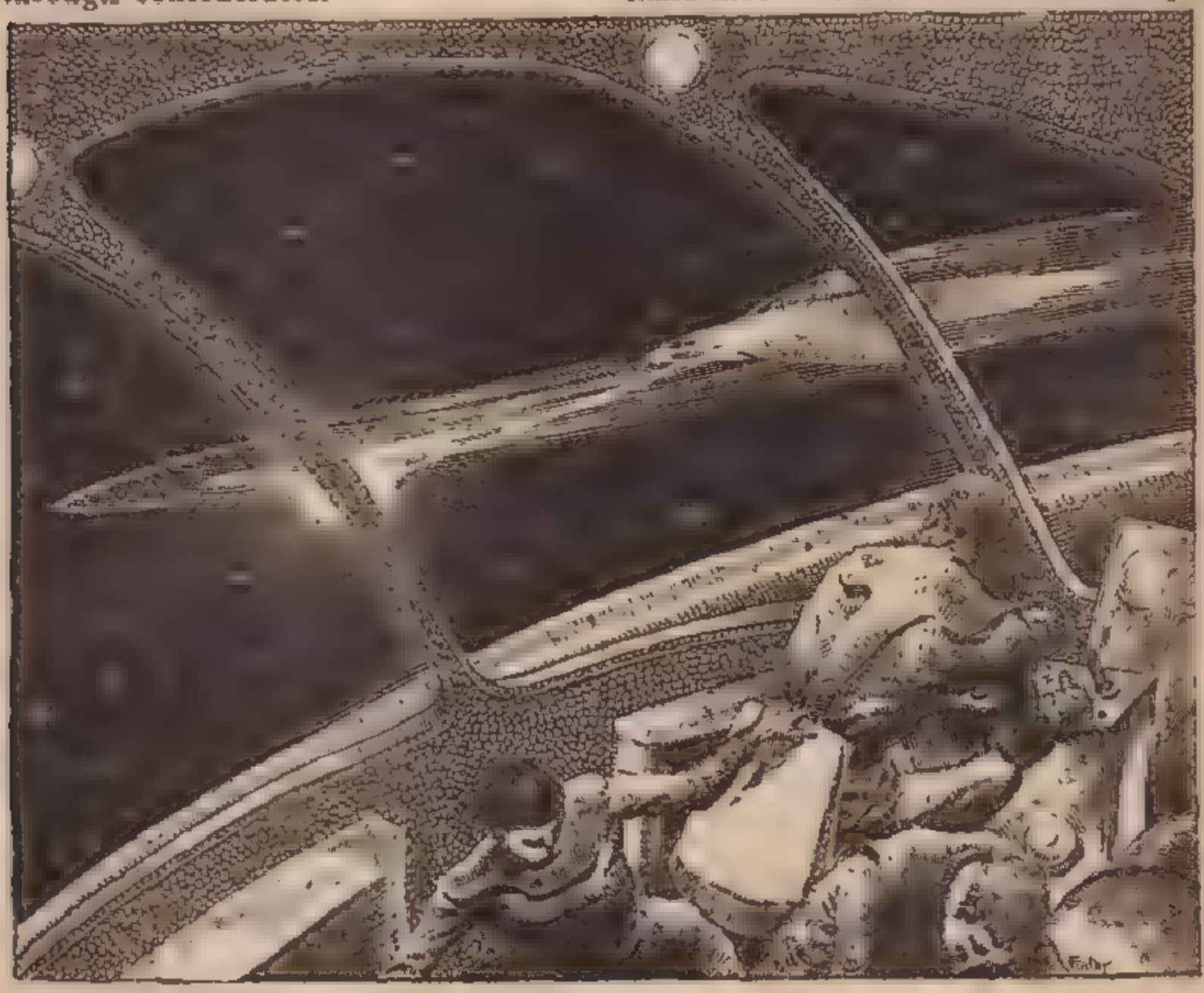
Rodney Shelton grinned mirthlessly.

"It amounts to about that. He's the most mysterious figure living today. No one seems to know just who he is, or how it started, but he lives out in space, in a ship elaborately equipped. He has a complete laboratory in it, they say!" He shook his head wonderingly. "He's been in space for twenty years, alone! He has never been known to land on any planet for supplies, but he must have some means of picking up fuel, oxygen and food, probably through confederates."

tervals, he contacts Earth scientists and asks for certain information to further his work on his great theory, whatever it is. But if you want to contact him, he's liable to ignore your call. He's called me once, to ask about a biological point, though how that could help him, I don't know."

"Why are you calling him?" asked the girl.

"A hunch more or less," confessed Shelton. "He has on tap a lot of first-hand information about the Solar Sys-



The Space Ranger's guns peppered the black ship (Chapter VI)

"What does he do out in space, alone, year after year? I should think he'd go mad!" The girl shuddered.

"He's a hermit by nature, I suppose," Shelton explained. "He's compiling data for a tremendous new concept of the Universe. He does no harm. Years ago the Space Rangers tried to track him down, but never caught him. They've left him strictly alone since then. His ship, with two large white crosses on it, has been sighted everywhere, from Mercury to Saturn. At intem. He may know something significant about Iapetus."

The operator turned. "Here's your party, Dr. Shelton—the Space Scientist!" He looked rather startled, at having contacted this mysterious, almost mythical character. "You can take the call in private booth Three."

Shelton strode to the booth, motioning Myra Benning to follow. It was something to keep her mind off the thought of her brother's sad fate.

He closed the door behind them, in

the roomy booth, and snapped the switch. The opti-screen came to life with a subdued hum. Spectrum colors flitted across the fluorescent round plate and finally intertwined into the head and shoulders of the Space Scientist.

Myra Benning caught her breath. The face was hidden. The entire head was enclosed in an opaque globe of what seemed to be semi-porous cloth. No features were distinguishable behind the mask.

"HE always wears that hood, at least while televising," whispered Shelton. "No one has ever seen his face." He did not realize that the sensitive instrument in the enclosed booth was picking up his whisper.

"And no one shall ever see my face!" came in harsh, stiffly accented tones from the masked image. "I have made a vow never to let Earth see my face again. Twenty years ago, on Earth, in a laboratory . . . Well, no matter." A strange laugh came from behind the head. "But you wouldn't want to see my face. It isn't a pretty sight!"

Shelton glanced at the girl significantly. This confirmed rumors that an unfortunate accident in a laboratory had seared the Space Scientists's face horribly, and had embittered him. It had finally driven him to exile himself in space, where no one would see his disfigurement. Shelton felt pity for the man.

"I'm sorry," he said simply, then went on hurriedly, after an awkward pause: "I've contacted you, sir, to ask for any information you may have about Iapetus."

"Why do you want to know about Iapetus?" the Space Scientist asked coldly.

"Seven men have come back from there in a state of suspended animation, apparently from breathing Iapetus air," Shelton explained. He went on to give the details.

The masked scientist seemed to listen attentively, but at the end he said laxly:

"I am not interested in these affairs. I am not interested in any earthly matters. I have divorced myself completely from that pettiness. Men are fools. Life is futile and meaningless. Only mind is important, and the contemplation of the great mysteries of the cosmos!"

The globed head moved forward and the voice lowered with tension. "I am at the verge of a tremendous new concept of the Universe. It will embrace all things in one master formula! That has been my dream for twenty years. It will be a significant achievement. It will in one sweeping stroke give meaning to all things!" He ended almost in a shout.

"But sir, about Iapetus—" began Shelton.

"I don't care about Iapetus!" retorted the masked man scornfully. "I have no concern with your petty troubles. I'm not a citizen of Earth, furthermore. I am my own master, with all space as my domain." His arm moved as though to snap off the connection.

"Wait!" snapped Shelton angrily. "You may be independent of earthly ties, but you're still a human being. As such, you must have some regard for earthly things!"

The Space Scientist's arm drew back. "Still a human being!" His mirthless laugh sounded again. "Well spoken! Who are you again?"

"Dr. Rodney Shelton, of ETBI."

"Ah, yes," said the hidden lips, reflectively. "I recall contacting you once. You answered my questions. So in return if I can help you, I suppose I should. But be quick about it."

"Have you had occasion to test the Iapetus air recently?" Shelton queried.

"Yes. Just a minute and I'll get my record." The Space Scientist's form moved aside, out of the screen's range.

SHELTON'S eyes stared wonderingly into what he could see of the cabin of the Space Scientist's mysterious ship. His vision went down a short corridor, into a laboratory. A bewildering variety of apparatus was discernible, most of it blurred from off-focus so that he couldn't guess its nature. Yet he could sense the com-

pleteness of equipment and advanced nature of the man's experiments. Another of the many unconfirmed rumors about the Space Scientist was that he had discovered amazing new things that Earth scientists would pledge their souls to know.

Myra Benning shivered. "Somehow, he's so cold and implacable," she whispered. "He doesn't seem human any more. He's been warped by his long life in space to something different from you and me!"

"Nonsense!" Shelton laughed shortly. "On the contrary, he *is* still human, in nature as well as body. More human than he knows himself. He proved it by yielding to my little speech."

He broke off as they heard footsteps approaching the screen. The Space Scientist's masked face appeared.

"I had occasion to land on Iapetus, in the course of my planetary studies," he said. "I analyzed its atmosphere. Gases present in Iapetus' atmosphere are oxygen, nitrogen, hydrogen, carbon dioxide, helium, neon and traces of the other noble gases. If you want the percentages—"

"No," declined Shelton. "When did you make the test?"

"Once ten years ago, and also just a month ago. The results were the same both times."

"One more question," pursued Shelton. "Do you think it possible for an alien gas to be present, so unstable that it cannot be detected?"

"Impossible!" the Space Scientist said confidently. "Particularly with my technique. I use a cold-light spectroscope." A boastful note crept into his voice. "Earth's scientists don't know of that method. It examines substances at the low, stable temperature of liquid helium!"

Shelton stared. That was incredible and he almost said so. No one had ever made spectroscopic tests without heat. But then he remembered to whom he was talking—a genius, mad or not, who had labored at his space science for two decades. Space was cold. Perhaps his researches had naturally veered toward low temperature methods.

"I see," Shelton said. "That's all I wanted to ask you, sir. Thanks and good-by."

He was reaching a hand to switch off, but the Space Scientist's voice interposed. "What are you going to do about those seven unfortunate men?"

"I thought you weren't interested in earthly affairs?" said Shelton sharply, suppressing a smile.

"I am, though in a purely esoteric way," the masked man returned. "Life and men's doings are, after all, a part of the Universe which I am encompassing in my theory. I cannot entirely ignore that which exists. All mankind will be represented by one symbol in my formula—the symbol *zero!*" There was almost an ominous note in his voice. "Perhaps I'll explain that in some future contact."

"I'll look forward to it," said Shelton. "As for the seven men, adaptene will revive them, I believe." He set his jaw. "And I'm going to solve the mystery of what happened to them if it takes a year! Good-by!"

HE snapped off, but not before a slightly derisive chuckle came from the Space Scientist, just before his image faded.

Myra Benning shivered again. "Now I can appreciate that expression, the 'cold scientist'," she murmured. "He's all of that. If he can laugh at the predicament of those men, he's a—a beast, too!"

"But he's human!" defended Shelton. "Notice how close he was to Earth—must be hovering fairly near, since there was so little delay in the signals going back and forth. He probably stays around Earth a good deal, eagerly listening to news and vision programs, eating his heart out because he's made a silly vow never to come back. I've got him figured out!"

CHAPTER V

Expedition to the Unknown

WHEN they got back to the hospital ward the men were still

in their lifeless stupor. Shelton ordered another injection of adaptene.

The night hours fled, as he waited. But at dawn the whole tired crew was electrified to hear a low groan, above the noises of the laboring lung machines. Shelton dashed up and peered down into the glass top of the drum, to see the man's arms and legs twitching. His head was moving from side to side. He was alive!

Suddenly his voice was heard, faintly, through a vibrator: "Gas—cold—choking—damn them! Gas—"

Agonized moans followed, then silence. The man—Captain Harvey—had fallen into a restful sleep.

"Take him out," ordered Shelton. "Adaptene did it, all right. The others will revive soon, too." His smile of relief changed into an aching yawn. "And then we can all get some sleep."

Eight hours later, a momentous conference took place in the ward where the seven men who had met seeming death on Iapetus were recovering. They were fully awake now, smoking cigarettes, and apparently unharmed.

"Tell us just what happened, Captain Harvey," Rodney Shelton asked when Director Beatty arrived.

Myra Benning and Mark Traft were already there. The big pilot, looking himself after a night's sleep, had greeted his companions with unreserved joy at their miraculous return to life. For a week he had seen them as men dead.

"There isn't much to tell," Captain Harvey said slowly. "It struck us like a lightning bolt. We were looking into the cave, couldn't see much. Then suddenly an intense cold feeling came over us. At the same time some odorless gas choked us. At least that's the way it felt."

He looked around at his men for corroboration and they all nodded. Their eyes reflected the shock they had felt.

"We tried to run for the ship," Captain Harvey resumed, "but we lost consciousness. That's all we knew until we woke up here a few hours ago." He smiled wryly. "It's hard to believe that days have passed!"

"The whole thing is a mystery!" grumbled Director Beatty. "Where did that gas come from? Shelton, we've got to know!"

Shelton faced the group, his features thoughtful. "I've come to certain conclusions already," he stated, without preamble. "The strange gas did not come from the general atmosphere. I've checked that with the Space Scientist." He gave the facts briefly, disregarding their surprise. "Therefore, it may be that the gas came from the cave. Formed by volcanic action, perhaps, within Iapetus. Puffed out of the cave as a natural vent."

"That's logical," mused the Director.

But Shelton suddenly whirled on Captain Harvey.

"When you were coming out of your coma, Captain, you said, 'gas—choking—damn them!' Why those last two words?"

THE captain started. "Did I?" he began lamely, then drew a breath and went on firmly. "It might have been my imagination, but I thought I saw figures lurking in the cave's shadow! None of the others saw figures. I've asked them. I was nearest the cave mouth, calling to Benning to step down from his dangerous perch. The cold struck at that moment, and I thought I saw some forms in the cave." He set his lips grimly.

"That would mean," Shelton spoke incisively, "that some person or persons, in the cave, shot that gas out!"

The assembled men were dumbfounded at the implications of that.

Traft's big fists had involuntarily doubled. "It could be private interests working!" he half roared. "Maybe they want the beryllium ore for themselves, and are willing to go any lengths short of murder. If somebody has invented a gas that produces suspended animation, they had something as useful for their purpose as a death gas!" He ground his teeth in sudden rage. "Dirty dogs—using a horrible means like that to hog the beryllium ore!"

"Ridiculous!" spat out Director Beatty, glaring at the impulsive pilot. "We can't jump to conclusions like that! It must be a natural phenomenon. Private interests wouldn't dare

go to such lengths." He directed his glare at Captain Harvey. "With all due respect, Captain, I think you have an overactive imagination!"

"Maybe so," retorted the bluff captain easily. "But my men and I are going right back up there, as soon as we can, and find out!" The spirit of daring shone in his eyes and his men unhesitantly nodded their willingness.

Shelton's eyes suddenly took fire. He faced the director.

"I think ETBI should send up an expedition, and I'll lead it! Iapetus is next on our list anyway, for field tests toward bio-conditioning. In fact, we can combine expeditions — use the *ETBI-14*. That's a big enough ship for Captain Harvey and his men, and all their surveying paraphernalia."

Director Beatty thought that over, his bearded face dubious. Shelton had led such routine expeditions to ten other worlds, but only after navy outposts had been established. This was different. "Hate to risk a valuable man like you up there, Shelton"—

"Risk?" scoffed the young scientist. "There's a Navy outpost on Rhea."

"I'll sanction it," agreed the director finally, arising. The *ETBI-14* can be outfitted and ready in a week. I'll have to snip a little red tape to have the expeditions combined, as you suggest, but I think it's a good idea."

He had turned to leave when Myra Benning touched him on the arm.

"I'm going along!" She wasn't asking him; she was stating a fact.

"W-what!" The director opened his mouth to remonstrate, but the girl said:

"No one saw my brother die on Iapetus. There's a chance he's still alive—in a state of suspended animation! I'm going along!"

"This is—er—highly irregular," Director Beatty growled. "But I'll arrange it." He wilted before the girl's fixed determination.

SHELTON stared at her in surprise. It had never occurred to him that she was possessed of so much will. And courage.

A week later the expedition ship had been fully stocked and fueled, its huge engine tuned and tested for its long flight. Dawn was just breaking redly as Captain Harvey and his men, fully recovered, trooped into the lock.

The hulking form of Traft followed Myra Benning up the gangplank. The girl was in mannish attire. Shelton watched her half in surprise, as though it had suddenly come to his attention that she was a woman. She was obviously that, in man's clothing.

No one was there to see the take-off except Director Beatty and a drome official. Newspaper and opti-view men had not been informed. It had been

[*Turn Page*]

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thought best to keep the whole matter a secret, since the news, distorted by rumor, might easily place an unnecessary stigma on Iapetus' future.

"This is purely a scientific expedition, not a snooping for trouble!" Director Beatty warned Shelton in formal tones. But his voice became more intimate as he said, "Good luck, lad!" He took Shelton's hand in a warm clasp and gave him a friendly clap on the shoulder.

"Don't worry about me, Director!" Shelton said cheerfully. "There's no danger up there except a mysterious gas from which we can easily protect ourselves."

He leaped lightly to the lock's threshold and pulled at the heavy portal plate.

"If there should happen to be anything—subversive," bawled the director just before the plate banged shut, "call the navy outpost—"

With a thunderous crescendo of its drive tubes, the great ship *ETBI-14* taxied a thousand yards down the runway of Tellus Space Port and then roared for the clouds as its under tubes thrust against gravity.

Strapped securely in one of the two seats of the pilot's cupola, Shelton relaxed his muscles against the inertia. No use fighting it, as Earth-lubbers usually did, to ache later. Beside him sat brawny Mark Traft, watching the panel dials with a careful, yet casual eye that spoke of his assured skill.

"Nice boat," he said feelingly. "Handles like oiled silk."

Shelton craned his neck toward the side port. The ground slanted away, tipping at a crazy angle, with the skyscrapers of mighty Manhattan hanging breathlessly from a steep cliff. So it seemed from the interior of the departing ship, as the rhythmic thump of the rockets pushed Earth away.

The ship bored its way through shimmering cloudpacks that seemed to split asunder as the clear shiny stratosphere was reached. Earth was now a huge, cotton-filled bowl back of them. Shelton blinked, waiting for the queer optical illusion to change. It did, suddenly, and the half-Earth became a tremendous concave shell. With it came that startling, hollow sensation that the world they had left was dropping into a bottomless pit, while they hung motionless.

The ship tore through the thinning, darkening stratosphere till the stars peeped out, one by one, gradually peppering the whole firmament. The Sun, to the side, blossomed out in unhindered glory, halo and corona plainly visible. Traft reached over with his huge paw to adjust the Venetian-type shades, cutting off most of its fierce, blinding glare.

WHIPPED along by its tempestuous drive jets, the ship hurtled through the last fringes of atmosphere into the universal midnight of space. Here the way was clear and the suddenly muted rocket blasts revved into its high-power plane, piling on speed. Cross-hairs over the chart on the pilotboard followed the red line of their plotted course.

They were on their way to Saturn.

"Nice, smooth take-off, Mark!" commended Shelton admiringly. "You've got that real 'feel' for ships. You certainly didn't miss your calling!"

"Thanks, Rod!" The giant pilot was plainly happy when sitting at the controls of a ship. His good-natured face shone. "Sure glad we're together again, old boy! It's like old times!"

"Fate kept us apart too long," agreed Shelton. "And brought us-together on a pretty strange twist. How long do you estimate the trip?"

"About eight days."

Shelton looked surprised. "I figured seven myself. Why the extra day?"

"We're taking a high jump over the asteroid belt, following the safest liner route." Traft reluctantly added, as he saw Shelton's raised eyebrows. "Orders from Director Beatty. You see—"

"Yes, I see," snapped Shelton. "Valuable life aboard—mine!" He scowled heavily. "I wish they'd stop treating me like a gold cup. Why didn't they send half the Navy along, as convoy, while they were at it?" He kicked disgustedly at the wall as he made for below.

Traft grinned. Rodney Shelton didn't realize his own importance. The

pilot had heard much, from the lips of Director Beatty. The man being groomed to take over ETBI some day, when Beatty was retired, could not be lightly risked to the dangers of space. Earth's program of colonial hegemony was too vital to stand the loss of one of its key men. Traft had made secret promises to stick with Shelton every minute of the day and night.

With his attention less occupied by the ship, the big pilot took down his camera from its wall clamp and made the lens adjustment that would give the best space views. Pictures of Earth as a receding globe were always fascinating, and always different, no matter how many times he took them.

Routine settled over the ship. There was much time for cards, chess and idle talk. Somehow, their destination wasn't mentioned much, except casually. Yet there was a tension that grew hourly.

Shelton could understand why. To all except himself, the arrival at Iapetus would be a personal matter. To Captain Harvey and his men it was the desire to solve, if possible, the mystery of their recent adventure. Big Traft clenched his fists at times, unconsciously, and Shelton knew he was thinking of possible battle, if Captain Harvey's "figures" turned out to be real. Myra Benning's eyes showed she was thinking of her brother—and hoping.

SHELTON himself felt the surge of adventure's pulse in his veins, stirring his red blood, promising excitement, in one shape or another. Questions buzzed in his mind. Had the mysterious gas come from the cave? Had it been produced artificially? If so, had it been meant to discourage further survey of beryllium ore? And was it non-lethal for that reason, to avoid bringing down the full wrath of authority?

Two days later, Earth standard time, the *ETBI-14* passed over the asteroid belt. Myriad new stars twinkled out of the backdrop of space, winking as the irregularly shaped little bodies rotated in the sunlight. Had they passed closer, they would have seen the bright magnesium beacons lighting the clearest lanes directly through the gnarled group. But they were far above the zone and soon the little planetoids faded into the obscurity of space.

After ample warning bells had clanged through the ship, rocket power was started up again, this time with an off-thrust that would slant them back from the peak of their flight to the Solar System's level. Most ships, except those on express schedules, adopted this route for the added safety factor, though at the cost of time, distance and fuel.

And now, with a direct course set for far Saturn, impatience began to grow on them all. Iapetus, moon of mystery, occupied their thoughts. And more and more the monotonous routine aboard the unpowered, coasting ship palled. There was not much to do in space but eat, sleep and watch the clock.

CHAPTER VI

Attack in the Void

ON the fourth day, something happened to break that routine.

Shelton was in the main cabin at the time, dozing in a lounge chair. Most of the men were playing cards, murmuring in low tones. Myra Benning sat stiffly, gazing out into the star-spattered void.

"Look!" The girl cried out abruptly, startled.

"What?" Shelton's eyes snapped open, staring at Myra, as were the others.

"Out there!" She pointed out of the port. "Something black—and huge!"

They all scrambled for the port, shading their eyes from the cabin light's glare, peering out. There was something out there, black and large, that blotted out the stars in that direction.

"A meteor!" somebody yelled. "Warn the pilot!"

"It's not a meteor!" snapped Shelton. "It's oval-shaped, symmetrical.

And it's paralleling our course, which meteors don't do. It's a ship!"

"Without a light and painted jet-black!" breathed another of the men. "A pirate ship!"

Myra Benning drew in her breath sharply. There were tales told of piracy that made the blood run cold.

Shelton was already on his way to the pilot's cupola, pulling himself up the companionway by sheer muscular effort in the gravityless ship. He burst into the room to find Captain Harvey staring out anxiously. Traft was signaling the engine room to stand by for emergency.

"Pirate?" Shelton demanded.

"Might be," the captain said nervously. "Anything can happen out here, beyond the asteroids."

"Looks mighty suspicious," agreed the big pilot tensely. "It came up so suddenly I didn't even see its rocket blasts."

"Signal it!" ordered Captain Harvey. "They usually make their demands by radio. It might be trying to contact us already!"

"Aye, sir!" Traft punched at the radio stud.

The black shape, looming nearer, was evidently angling in so that its prey could not escape. Its entire surface was a uniform, dull, unglazed black that barely reflected the light of the distant sun. No ports were visible; not a single beam of light relieved the utter blankness of hull. No ship like that had ever been reported before. Shelton's pulses were throbbing.

"Ahoy!" Traft bellowed into his microphone, on the all-wave circuit. "What ship? Veer off immediately or state your purpose!"

Captain Harvey reached over to pull the handle, sounding the alarm below to strap in for suddenly applied power. If worst came to worst, they must be ready to run for it before the strange ship, if it were a pirate, had a commanding position with its guns.

"If they don't veer off, we will!" he said tightly. "Traft—"

"Wait!" interposed Shelton. "Let's not be scared off so easily. I don't see a gun on them."

Captain Harvey's head jerked up. "Dr. Shelton," he said firmly, "as navigation captain, I have full command while in space. My flight orders are to be obeyed without interference!"

SHELTON flushed slightly, but nodded. He realized there could not be two captains during an emergency.

"Traft," continued the captain, "try once more, and if they don't answer, we veer off."

The big pilot, bawling louder than before, repeated his call. No answer came.

"Blast them!" Traft growled. "Who do they think they are, not answering? For two plugged Martian nickels, I'd ram them!" He coughed suddenly, and his voice was thick as he said jerkily: "Something's happened! I feel cold—numb—"

Everybody aboard the ship had the same sensation. Something gripped their nerves with an icy clasp, as though they had suddenly plunged into a frigid pool. Yet it was only internally that they felt it; the surrounding temperature had not changed.

Shelton gasped. What terrible force was probing into their vitals with congealing fingers?

He had no time to conjecture. He felt his senses swim. His legs crumpled weakly under him, and he knew that had there been normal gravity, he would have crashed to the floor. As it was he slowly swayed, feeling all the strength go out of him. A crushing weight seemed to smash into his chest, knocking his breath out. Feebly, he tried to fight off the invisible incubus. He was choking, gasping, fighting for breath.

"Traft—veer—" Captain Harvey was leaning crazily against the bulkhead, like a sagging, stuffed dummy.

Traft's eyes were popping out as his lungs strained against a deadly paralysis. With a herculean effort, half growling and half strangling, he raised hands that were numb and seemed non-existent. Every muscle quivered against an intolerable lethargy. He punched at the power key-

The ships dropped bombs on the cities of the aliens (Chapter XX)

board with one big paw and with the other grabbed the belt around Shelton's middle.

His numbed fingers bent clumsily at the knuckles as he touched the drive-tube studs. He pressed them over by the sheer smashing impact of his hand. Instantaneously the offside rockets fumed sulfurously, throwing the ship off its arrowlike plunge through space.

Traft's body jerked against the straps of his seat. Shelton would have catapulted against the wall except for the big pilot's death grip on his belt. Captain Harvey merely flattened against the bulkhead, as the line of motion was away from him.

The strange force gripping them eased suddenly, and Traft let out his breath in a sobbing hiss of relief. But only for a moment was there respite. Shelton, diving for the second pilot seat, barely had time to fling the strap around him before the terrific numbness again seized him. Coincident with their motion, the attacking ship had also swung sideward, keeping close.

"Oh no you don't!" Traft snorted savagely. "I'll show you a thing or two about maneuvering!"

He applied both hands, rapidly going limp again, to the keyboard, and their ship darted ahead. The next second it braked. Captain Harvey came flying forward, with a wild cry. Shelton was barely able to stick out a hand and grab the captain's arm, pulling him between his knees. He fervently hoped all those below had heeded the warning bell and strapped in when Traft had begun his game of tag with the enemy.

THE big pilot sloughed the ship around madly, with volcanic blasts from all angles in succession. They flew up, then down, then back, till the ship creaked throughout its length. But the mysterious black marauder followed relentlessly, duplicating every maneuver with maddening ease.

The numbing force began to bathe them with unvarying intensity. Shelton felt himself sinking into oblivion, with a hopeless feeling. Yet he saw that big, powerful, indomitable Traft had not given up.

Putting into play every ounce of his splendid vitality and strength, Traft continued punching desperately at the keyboard. He tried a straightaway dash, at triple acceleration. The amazing craft of Stygian gloom followed, crawling up on them as though to show its superiority. Expertly it maneuvered closer than before, and the paralyzing force grew stronger—stronger.

Muscles cracking, Traft jerked profane defiance out of his strangling throat and pounded his balled fists at the keys. But it was useless. His muscles had turned to water. Groaning, fighting to the last, he felt his spine going limp. Another few seconds now, and he'd be helpless, like the others were.

But the terrible internal stricture ceased suddenly!

Amazed, Traft jerked his body erect. Then he saw why. Out of nowhere, the vermilion flames of rockets had appeared, and a long, sleek ship streaked up. A Space Ranger ship! Traft ripped a hoarse shout of relief from his raspy throat.

With its bristling guns peppering shots at the black ship, the Space Ranger blasted up like a zooming meteor. The black ship withdrew, sullenly it seemed, as though debating whether to outface the formidable armed newcomer. Then it plunged away, with the Space Ranger after it.

"What's—up—Mark?" Shelton asked dazedly, raising his head with a suppressed groan.

"What's up?" chortled Traft. "Our dark friend just slunk back where it came from, with a Ranger hot on its trail! You know what that means. Ten to one that the black ship will be full of holes in five minutes,, and those aboard lucky enough to get into vacsuits, prisoners!"

"Saved!" breathed Captain Harvey. He crawled weakly from between Shelton's knees. "Saved from—" he broke off, shuddering. His eyes had a strange, wondering gleam in them.

They remained where they were, panting, relaxed, gaining back strength that had been sapped dangerously near the limit of endurance. They didn't speak for awhile, enjoy-

ing to the full the delicious feeling of being snatched from an unknown fate.

Presently Traft snapped on the broadcast phone, plugging in the main cabin.

"Everybody all right down there?" he called.

Myra Benning's voice, answered after a moment, shakily.

"Yes. All of us were strapped in. But what happened? What was that frightful numbness?" Her tones were bewildered, high-pitched with hysteria. Then, before he could answer: "Is Dr. Shelton all right?"

"He looks about like he'd just come out of Jupiter's Red Spot," Traft said wryly, "but he's okay. We—"

HE snapped off with a hurried excuse as the signal light flashed above his space radio. Through the port they could see the Space Ranger returning, retarding rockets belching. Gracefully it maneuvered to parallel their course. The seven-pointed star insignia of the Space Rangers, policing corps of the Space Navy, was emblazoned in gold over its silvery hull.

The Ranger commander's keen-eyed face appeared, slightly baffled in expression, in the opti-screen.

"Commander Gordy, Space Ranger ship *Forty-four-B* reporting to Dr. Rodney Shelton, *ETBI-14*," said the image. "The black ship escaped, sir!"

"Escaped!" echoed the three men blankly. The Space Rangers, policing all the spaceways, had the best and fastest ships known.

"By a trick?" Shelton asked.

"No, sir. It simply pulled away from us on the straightaway. And it doesn't seem to use rocket motivation. I can hardly understand it myself, sir!" The commander looked genuinely shame-faced.

"Of course it was dark and unlighted," admitted Shelton. "No fault of yours, Commander, I'm sure. We're only too glad you were here, in time to—" He eyed the officer askance. "Incidentally, how *did* you happen to be at hand so miraculously?"

The man smiled slightly. "We've been following you all the way from Earth! Director Beatty's orders, sir! When we saw your sudden maneuvers, as revealed by your rocket flares, we knew something had happened and came up. We are to convoy you to Iapetus. We'll be right behind you for the remainder of the trip, Dr. Shelton."

"Very good, Commander." Shelton clicked off and whirled. "Did you hear that?" he exploded. "A convoy—for me! What am I, a man or a museum piece?"

"If you ask me," Traft drawled pointedly, "it's rather lucky for us the Ranger was around!" He rubbed his bruised knuckles ruefully. "About ten seconds more and—" He interrupted himself. "But that ship! Why the attack? What did they use on us? And it didn't use rocket power! What motivated it, in the name of Jupiter! A space ship can't run without rockets! It's fantastic!"

"Yet it did!" Shelton quietly interposed. "It must run by some sort of gravity control. Scientists have tried for years to develop that, without success. But that ship had it! We have to face facts. It also had some sort of ray, or field, projected across space from ship to ship, that produced the numbing sensation. Fantastic again, but somehow they do it."

"And Shelton!" Captain Harvey's voice was vibrant. He had come out of a perplexed daze. "That numbing sensation we went through—it was the same as our experience on Iapetus! The same cold feeling, choking, strangling. It wasn't a gas at all, as we thought. It was this same—force. I'd swear it!"

Shelton was thunderstruck. Had they been at the point of being thrown into suspended animation? Had it in fact been this same force, instead of a gas, on Iapetus? Something that could rapidly extract energy from the nervous system? A sort of "cold-beam"—exact opposite of a heat-beam?

"THAT seems to tie it up with the the Iapetus affair!" Shelton ground out finally. "And that means your 'figures' in the cave are real af-

ter all, Captain Harvey. But just *who* are they and what's their purpose?

"Pirates with a hide-out there," rumbled Traft. "Or piratical private interests who want that beryllium ore. Same thing. They don't want our noses in their business. Simple enough, isn't it?" He doubled his fists and his eyes gleamed. "I think we're going to run into something on Iapetus. Well, there's nothing I like better than a good fight." His good-natured face twisted into a ferocious grimace.

Shelton smiled. "You may be right, you old warrior. Good thing Beatty doesn't know of this." He laughed, half bitterly. "He'd want me back right away, locked up and guarded by the Navy."

"Shelton," Captain Harvey said slowly, "perhaps it would be best if we did turn back! We don't know what—"

Shelton jerked up, his face determined. "Captain, you're navigation commander, but I'm commander of the expedition. I have signed orders to land the expedition on Iapetus. And that's what we're going to do!"

Captain Harvey shrugged and left for his office.

"Good boy!" Traft approved warmly. "There's nothing like a little excitement to make life worthwhile. It—"

The flashing of the radio signal interrupted him. He snapped on the opti-screen, tuning till lights began to flicker at micro-wave nine. Shoulders appeared, and a head invisible behind a masking globe!

"The Space Scientist!" exclaimed Shelton, stepping to the microphone.

"Yes, it is I!" the image said, in cold tones. "I am calling to warn you not to go to Iapetus!"

Shelton and the big pilot looked at each other in amazement.

"Why not?" snapped Shelton.

"Because danger awaits you there! It would be best for your own sake to turn back, Dr. Shelton!" The mysterious scientist's tones were serious, almost ominous.

"But how do you know that?" demanded Shelton. His eyes narrowed. "We were just attacked. Do you know of that too?"

The Space Scientist nodded. "In the course of my wanderings through space, certain things come to my attention, unavoidably. Don't ask me any further questions. I am not concerned with those things one way or the other. I care only for my science, my great theory. But I give you this warning—do not go to Iapetus!"

"Why are you taking the trouble to warn me?" queried Shelton curiously.

The queer masked man did not answer for a moment. Finally he said, in gruff tones:

"Don't attribute it to maudlin sentiment. I've renounced such things. Earth is a world of fools who let human emotions run away with them. My motive in this case is simply esoteric. You have a good brain, Shelton, and you are a scientist. Science must go on. You would come to harm on Iapetus. That is all I have to say."

CHAPTER VII

The Secret of the Cave

ABRUPTLY, the masked image faded from the opti-screen. Shelton turned with a grin.

"By glory, the old boy likes me!"

Traft came out of an astonished trance at having seen the semi-legendary Space Scientist, though he had not been too astonished to hastily snap him several times with his camera.

"What about the warning, Rod? Maybe—"

"Maybe nothing!" cried Shelton, his jaw set grimly. "We're going to Iapetus. You couldn't stop me now with ten cold-rays. I'm going to solve their mystery if I have to explore the whole System to do it!"

The great *ETBI-14* nosed its way into the little Saturnian universe. It was a welcome sight to the voyagers, after the long stretch through empty, monotonous space. In its ringed beauty Saturn looked like a gigantic rosy apple with a shimmering halo of perforated gauze around it.

It was the outpost, the present frontier, of man's empire beyond Earth. On misted Saturn's surface were a few scattered settlements that gathered the valuable medicinal herbs that grew there. Titan's mines were already gaining prestige for their rich tungsten, iridium and copper ores.

Rhea, about to be exploited for its sulphur and mercury, was soon to be given its first bio-conditioned citizens, through ETBI and adaptene. Shelton thrilled with pride at the thought.

But beyond, in the outer gulfs of space, man had not yet penetrated, except for occasional explorations. Distances were so vast, the three planets out there so frigidly inimical, that organized commerce had not yet tackled its prodigious challenge. It was the Antarctica of the Solar Empire, beyond Saturn.

After a stop at the Titanian docks for fuel and replacements of their emptied oxygen tanks, the *ETBI-14* and its Ranger convoy lumbered for wayward Iapetus. It was a small, glinting globe as they approached, rapidly enlarging to reveal its jagged, inhospitable surface. Just what mysteries would soon be unfolded there?

The ship began cruising parallel to the wild surface, upheld by underjets. Captain Harvey, after consultation of his charts, was able to point out the valley with the cave mouth. Traft landed the ship skillfully.

Back of them, the Space Ranger settled to rest. Its commander called Shelton:

"We are under your orders, sir!"

"Very good, Commander Gordy. I'll contact you later."

Shelton felt a glow of confidence, with that gun-bristling ship and trained fighting crew at his command. He was glad now that Director Beatty had seen fit to send the ship along.

Shelton called a conference of his ship's total group. He had Commander Gordy listen in by radio.

"Officially we're here as a survey party, and an ETBI commission," he began. "But unofficially, due to what has come to our attention since leaving Earth, we'll investigate the cave, first. I think we all agree on that."

"There were many others around me in suspended animation" (Chapter X)

The listening men nodded grim acquiescence.

"There shouldn't be any danger." Shelton continued. "We have the Ranger men for armed protection. So that *if* there are men in the cave, and *if* they have a strange new weapon, and *if* they're hiding something—" He left the rest hanging. "Captain Harvey, you and your men will accompany me. The rest will stay with the ship."

Myra Benning was stubbornly shaking her head. "No," she said flatly, "I'm coming along! My brother is in that cave somewhere — and alive! I want to help find him."

She hurried on before Shelton could even protest:

"Since we've landed I've been sure! Call it intuition or anything you want. He's alive in that cave — I know it! And I must go along!"

Shelton still looked dubious, but Traft spoke up.

"Let her come along, Rod. I'll keep an eye on her."

The girl flashed him a brief smile.

A brooding atmosphere seemed to rest over the scene as twenty vac-suited figures stepped from the two ships toward the black cave mouth at the nearest cliff's base. A ridiculously tiny sun overhead barely dispelled a deep gloom in the miniature valley. Age-old, untouched by natural life, the ancient surroundings were an utterly alien motif against an unfamiliar blue-black sky.

Shelton cautiously led his party to the side of the cave mouth, approaching it along the cliff face. Traft's giant figure followed him eagerly, convinced it was a pirate's nest that must be cleaned out. Myra Benning's smaller form was at his back, flanked by Ranger men, ready for any emergency. Shelton had told them the salient points about the whole affair.

Stooping, they were able to gain the high lip of the cave and crouch behind it. Then, carefully, heads were raised and eyes peered through visors into the cave. There was not much to be seen except that it was huge and stretched out interminably. Deep shadows hung on all sides, obscuring detail.

"See anything, men?" asked Shelton, his audio-vibrator carrying his voice to all of them.

A series of negatives was his response, and Shelton felt a queer sense of disappointment.

"There *is* something in that cave!" Myra Benning's voice was low, half breathless. "I can't see anything, but I can feel it! Something is waiting there, waiting—"

"We'll soon find out!"

Traft suddenly stood erect, lighting his hand flash and sweeping its rays back and forth. Harsh, startled cries came from the cave, echoed by the walls.

"There they are!" the big pilot yelled triumphantly.

Scurrying figures were revealed a hundred yards back.

"Down, you fool!" cried Shelton. "You're a perfect target—"

At that instant it struck, a wave of terrible coldness that constricted their lungs and turned their entire bodies numb. Even the protection of the rock lip was futile. Some incredible force seemed to suck heat and energy from their bodies and leave nothing but bitter, congealing iciness.

Shelton knew there was no time to lose.

"Up, men!" he ordered. "They've declared hostilities. Give 'em hell!"

Jumping up stiffly, the men set their rifles on the rock, snapping on the flashlights attached to the barrels. The flaring beams stabbed questingly into the darkness.

Traft's gun spoke first, as he sighted a dark figure at the dim fringe of his light beam. He grinned at the harsh yell that rewarded his aim.

Then all the guns were peppering, until the cave was filled with a hollow roar. Milling figures scampered back in the dimness beyond the range of the lights and vanished into the shadows beyond. Vaguely, they could make out a huge machine being dragged back with the retreat, and the numbing cold-wave died out.

"Cease firing!" ordered Shelton. "That taught them a lesson!" His

voice, however, was oddly hoarse.

"Guess they're pirates all right," boomed Traft. "But why didn't they sling some lead our way? Were they that cocksure of never being discovered? And that cold business — it doesn't add up quite right, does it, Rod!"

"No," agreed Shelton. "Mark, go in there and bring out one of those bodies. We'll cover you with our rifles, though I'm sure they've all gone."

Without a word the big pilot scrambled over the lip and carefully made his way down to the cave floor, winding past deep pits. He reached the first fallen body and kneeled beside it.

"Uh—Lord!" those outside heard him say.

Then he tossed the limp form over his shoulder and clambered back to the cave mouth. He tossed the body at their feet in the light, standing back with a dazed stare in his eyes.

Slowly, almost mechanically, he unhooked his camera from his belt and looked through the finder for a good snap. The picture would create a sensation on Earth.

The same dazed stare came into the eyes of the rest of the company as they looked at the body, the thing, lying on the white rock of Iapetus, lit by a feeble, distant sun.

"It's not human!" whispered Myra Benning, recoiling in horror. "It's an—alien being!"

CHAPTER VIII

The Great Machine

IN a vast cavern of Iapetus that to earthly senses would have been freezingly cold and impenetrably dark, a dozen figures emerged from their space ship. They made their way sure-footedly down the corridor. Their large, bulging eyes, with an unearthly light-gathering power, saw every detail of the way by reflected sunlight from the cavern's yawning mouth.

In sufficient light, earthly eyes would have made them out as repulsively alien, and yet shockingly human in shape. They were tall, giants almost. By casual inventory, each had two legs, two arms, a body and a head with two eyes, two ears and nose and mouth. Whatever evolution had spawned them had not seen fit to depart from that basic structure. Humans, thus far.

But it is in details that nature adapts her creatures to their particular environments. These creatures were cold-blooded, so that extremes of low temperature could not bring the chill of death. In place of skin, they were equipped with a horny epidermis divided into pentagonal plates. They had no hair, but crests of sharp spines stood on their heads. The feet were splayed and taloned.

Reptilian, the earthly observer would say, with a shudder. Reptilian creatures somehow cast in the human mold. Yet by a curious quirk, the hands were supple, humanlike. The scales of the faces were small and smooth. The foreheads were high and full, the eyes keenly intelligent.

It would be a mistake to credit them with low intellect, solely because of their alien attributes. The reptile species of Earth were dumb, witless brutes. These semi-reptilian creatures from another world were far higher in the scale of mentality.

The corridor opened into a large amphitheater outfitted with a variety of instruments, none made of metal. In a thronelike chair made of some plastic composition sat Lorg, the Alien Superior, bathed in a dim red radiance from a cold-fire bulb.

The Alien Superior was more brutish in cast than any of his subjects, with hulking shoulders and a feral gleam in his cunning eyes. His air was that of one who desired power and self-glorification. Ruthlessness was an aura about him. For the brain within his skull schemed endlessly toward a goal which, if attained, would cost many lives.

He looked the recruits over with an appraising eyes and nodded approval. They were fine specimens of his race.

young, strong and intelligent. They gazed back at him with awe, for he was a combined Caesar, Columbus and Napoleon in their conception.

"Welcome!" greeted the Alien Superior, and they saluted him. His voice, to human ears, would have seemed like the hoarse bull-roar of an alligator, curiously muffled by the thin, cold air.

"You all know why you are here," he said simply, but austerely. "You have been chosen for your courage and your skill with machines. Ahead of you lie hard work and a sacrifice of your normal lives. There is no return from here. Thousands have preceded you. Through the years, the drain of life has been large. The building of the Great Machine takes its toll almost hourly. Besides we are beneath the very feet of a powerful enemy who would hound us like rats, if they discovered our presence. It is not a pleasant shadow to live under."

HE looked down the row of faces that reflected youth and eagerness, though to human eyes they would have seemed expressionless.

"Are you prepared for these things—day after day of toil, sacrifice, danger? Never to see your native planet again?"

A thunderous chorus of cheers rolled down the dim, frigid halls.

"We are ready, Superior!" cried the recruits.

"Good!"

Their leader dropped his aloof, stiff manner. The speech had been more or less of a formal ceremony, calculated to impress the newcomers with the gravity of their mission. A general exhorting to deathless loyalty.

He leaned forward in his throne.

"I will tell you more," he confided tensely. "The hour will soon come when we will prove who has a mightier civilization, we or the Earthmen!"

His cold, reptilian eyes flashed momentary fire. He spoke the word "Earthmen" with the curl of his lips, but at the same time with an unconscious respect. Napoleon might have spoken that way of the British, whom he knew he must defeat before he could rule the world.

"This very morning," he resumed, "we made a thorough test of the Great Machine, and had it in operation for a short time. Though we used the minimum of power, there was a displacement of *one full inch* on our measuring scale. You all know, from your training in data about the Great Machine, what that means."

The recruits stared in stunned surprise. The Great Machine had powers even greater than they had been taught to expect. Then they burst out in wild cheers, at the thought of what this meant in the near future. . . .

Up above, on the surface of Iapetus, Rodney Shelton and his party stared long at the dead creature of unmistakable intelligence at their feet, so like them in general and yet so utterly alien in detail. Scaled body, taloned hands and feet, hooded eyes and the crest of horny spines decorating the head.

"An alien race of intelligence on Iapetus!" murmured Shelton incredulously. "The first known in the Solar System!"

That was true. Man, in going out to the other planets, had found himself unopposed master. There were evidences of a past civilization on Mars, but it had passed into limbo tens of thousands of years before. The anthropoids of Venus gave promise of future evolution toward intelligence, but that would not be for ages to come. None of the other planets or satellites had any life above the ape stage. Man was supreme.

And now here, like a bolt out of nowhere, was alien intelligence!

"Of all things!" exploded Traft. "Here we came to Iapetus expecting pirates and we find alien beings!"

He looked dumbfoundedly at the long, sinuous body with the torn hole in its chest where his radi-bullet had exploded and struck out life. A thin, pale red fluid congealed in the cold air as it trickled out.

"He's not—pretty," the big pilot commented. "Scaly, reptilian, living in caves—I don't like them, at first

sight!"

"They're monsters!" breathed Myra Benning, wide-eyed and trembling. "Horrible beasts!"

"But intelligent!" insisted Shelton, trying to absorb that fact.

"Maybe they're just savages, or at the caveman level," hazarded Traft. "They don't wear clothes—at least this one didn't."

"They don't need clothes, with that scaly hide," Shelton pointed out. "And clothing is no criterion of intelligence. And what about their cold force? And perhaps that black ship? Does it mean—"

HE stopped, not wanting to jump to any conclusions. What *did* it all add up to? The cold force, the black gravity ship, the guarded cave mouth? Were they a troglodytic race, inhabiting the caverns of Iapetus, and never discovered before for that reason? How advanced were they, how did they live, what were their activities and plans? Shelton's brain raced with a thousand questions, and his scientific instinct demanded the answers.

"Men!" Shelton said suddenly, facing them. "We've stumbled onto something important—almost incredible! We'll be making history when we report this! Who's with me to go further in the cave and find out more about these strange beings? We can reconnoiter step by step, without taking unnecessary chances. And they obviously can't outface our weapons."

"I'm with you!" Traft cried quickly. "We should find out anyway why these scaled people are so anxious to keep us out."

Fired by the spark of adventure, the other men glanced at their leaders.

"We shouldn't rush into this," Captain Harvey said, with characteristic caution. "We don't know how many there are, or what we'd be running into."

"We could inform the authorities first, sir, by radio," Commander Gordy temporized. "However, we have plenty of ammunition."

"Hugh!" Myra Benning choked suddenly. "My brother is in their hands! He's a prisoner of those monsters! I feel it!"

Traft nodded. "Maybe she's right, men. He was standing on the rock lip and fell inward. The aliens could have taken him away before I searched. My light beam, blinding them, probably saved me at the time. But they took Hugh Benning with them!"

Men became electrified. The thought of a human being, one of their own kind, a captive of the aliens, sent fire through their veins. If there was anything needed to swing the decision, that was it. Every man in the group whole-heartedly shouted to advance into the cave.

"Hugh Benning was a good man and we all liked him," Captain Harvey said, himself stirred. "If we can rescue him, *if* he's alive—"

"He is alive!" said Myra Benning firmly.

"I don't suppose," Shelton asked the girl, studying her set face behind the visor, "that there's any use trying to convince you to stay here."

"None at all!" assured the girl, and Shelton could understand.

Captain Harvey insisted on a careful check of their oxygen bottles. Each had a supply good for at least ten hours.

Shelton called the ships, via his helmet-radio, and informed them of the decision to investigate the cave and its alien denizens. Two of the Space Rangers were detailed as guards at the cave mouth, as an added precaution.

"Let's go!" Shelton called. He clambered over the rock lip of the cave, leading the way.

CHAPTER IX

Alien Underworld

WITH the gun-mounted flashlights illuming their path, they trailed over the uneven cave floor, avoiding shuddery pits that perhaps were riven gashes from some ancient quake. Huge twisted stalagmites of unguessable age loomed in their way

now and then, like great columns. Overheard the flinty roof of rock glinted with strange crystalline formations, in the glow of their beams. The click of Traft's camera echoed loudly in that dank, dark cavern of mystery and shadow, leading to—the unknown!

Shelton almost wished he hadn't been so impetuous in leading the men down here. The atmosphere of the place, brooding and rife with sinister promise, was weighing down his spirit. Who knew what lurked ahead, what possible danger? Then he remembered the warning of the Space Scientist!

But after all, he had fighting men at his back; armed, capable, courageous. They could not be cut off at the rear. With that thought he began to feel the thrill of leading an armed force. He, a scientist! Only incongruous Fate could have brought this about.

Behind him, Myra Benning hurried along, almost stumbling in her eagerness. Traft's ready grip steadied her at times. The girl had thought of her brother, alive in the hands of pirates, but humans. To think of him now, a prisoner of aliens—

The rest of the party swung along steadily, sending shafts of light on all sides lest there be an ambush.

The cavern narrowed down to a small corridor no more than ten feet high and wide. Winding slowly downward, it seemed to stretch into the bowels of Iapetus. Nervous tension held the group as they trudged deeper and deeper, with untold tons of rock hemming them in.

"What a place for a murder!" Traft said cheerfully. "Those beggars must like the dark!"

He peered sharply ahead, secretly hoping for a little excitement. But it was Myra who first noticed a scampering, shadowy figure ahead that darted out of a niche and raced fleetly away. Her sharp cry brought them all to a halt.

"Their advance scout, probably," surmised Traft. "Gone to tell the rest of our little visit."

"Shelton," Captain Harvey said nervously, "we should turn back. This is foolhardy!"

"That's just your opinion!" Shelton snapped back. "When I start a thing, I go through with it."

Commander Gordy and one of his men stepped forward. "If you don't mind, sir," he suggested, "we'll precede you. We're good shots!"

Shelton acquiesced, smiling at the subtle way they offered their protection. The party moved forward, but more slowly than before. Shelton was determined to find out some little thing about the aliens before giving up.

He estimated they had gone perhaps a half-mile from the cave mouth when suddenly the corridor opened out into a tremendous hollow space. The slope at their feet led down gradually, and the farther walls, where the slope must go up again, were lost in darkness. It was a far larger cavern than Shelton had ever seen, or had ever thought possible. It gave one the same giddy feeling as being out in empty space.

"SHINE the lights down in the hollow," Shelton commanded, wondering what lay on the floor of this monstrous rock chamber.

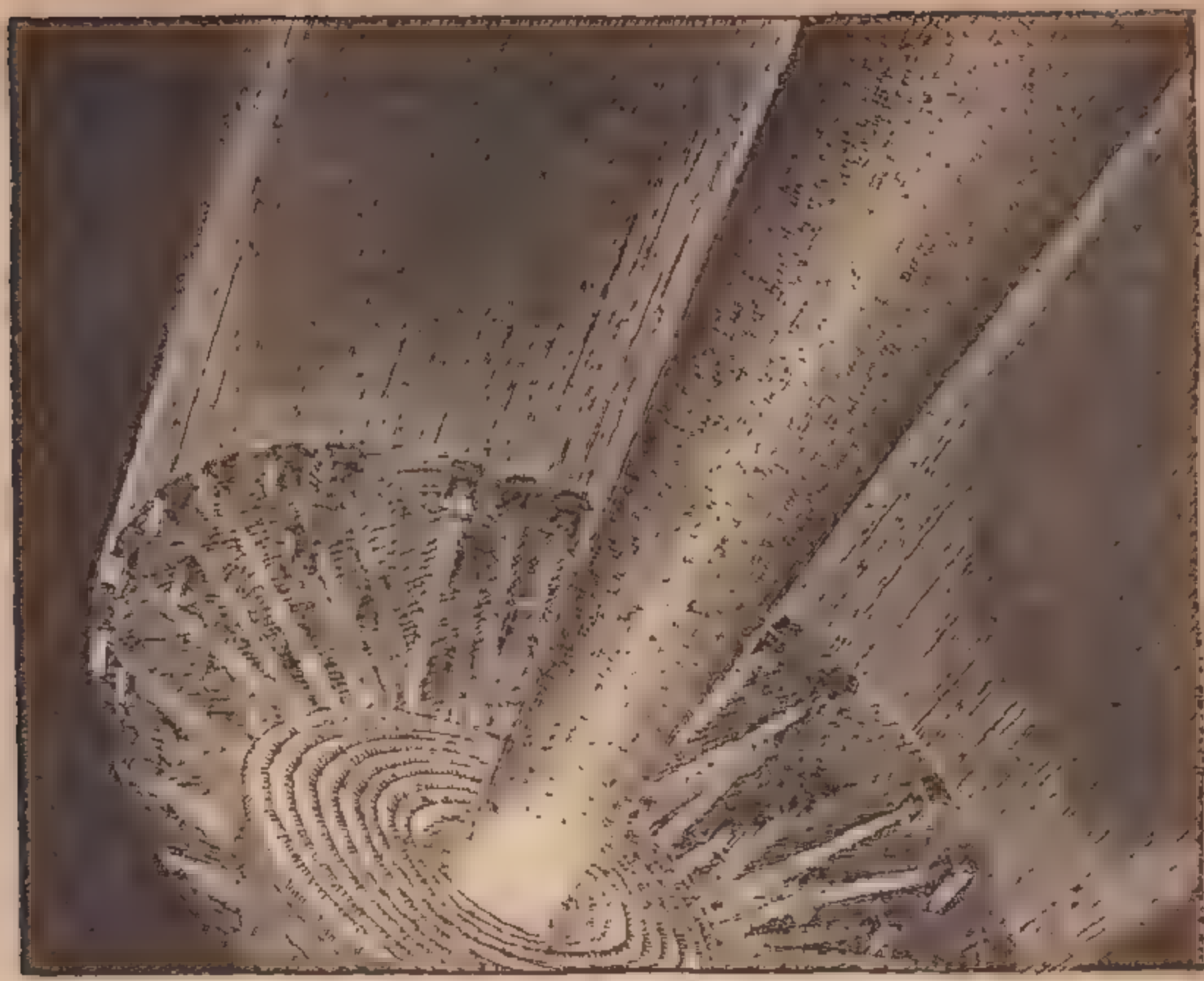
The beams stabbed along the slope, down and down. Their ends flared into haziness before meeting anything. But faintly beyond, by reflection, could be seen a confused mass.

Their eyes gradually adjusted to the dim lighting, revealing more detail. Something tremendous was spread there, over the rock floor; something vaguely broken up into cubes and cones and triangular spires. Dim red lights hung from some of these and shed an undependable crimson glow, barely enough to reveal architectural details. Avenues ran between the geometric structures, radiating from a hub, like a gigantic spider web.

Shelton blinked his eyes, certain that they were playing him tricks.

"It's a—city!" Myra Benning cried excitedly. "The city of the aliens!"

Standing at the brink of the slope, they took it in. A city within a world, unsuspected by the outside universe! A subterranean dwelling place whose horizons were shadows and whose sky



The gigantic coil was at least a thousand feet long (Chapter XV)

was solid rock. And all this done by hands other than those of men, deep within the most desolate world known to the Earth mind. It was like finding a great and complete city in the middle of the Sahara, or Antarctica.

"No, it wouldn't be savages who built that!" observed Traft soberly. "That's civilization!"

Shelton stared down in a trance, his brain whirling with wild, unformed conjecture.

"Well," he muttered, "at least we're sure now that there's another race in the Solar System—one approaching our level. That's important for Earth to know."

"Look!" Traft pointed, with a short laugh. "We seem to be creating a little excitement down there!"

Milling figures in the nearer avenues were running back, away from the lights, throwing up their arms as shields. Hoarse cries, both frightened and profane sounding, drifted up.

"They're troglodytes, unused to bright light," said Shelton. "Our flashlights must seem like blazing suns to them!" He glanced at Myra. "You believe your brother is down there?"

She nodded, a little hopelessly. "Yes, somewhere! I'm sure he's alive, and it must be here."

She stiffened suddenly, leaning forward with one audio-resonator of her vac-suit toward the city. Her eyes widened. "I seem to hear his voice!" she whispered hoarsely. "Listen carefully, everyone!"

They all heard it then, a faint hallooing that rose above the noises of the city and its excited inhabitants, and were instantly aware that only earthly lungs could produce those shouts. The cries of the aliens were distinctly different in timbre.

"It must be Hugh Benning, all right!" Traft was straining his eyes downward. He shouted suddenly. "There he is—I see him! Must have escaped. He's running out of the city, up the slope—without a vac-suit!

And there's a pack of the critters behind him!"

"Get ready to fire, men!" Shelton yelled, gripping his own rifle. "The first volley over their heads, to warn them off. Fire!"

THE thunderous volley rumbled through the cavern like a tempest, but it failed to scare off the aliens chasing Benning. Evidently they had been given orders they could not disobey.

The flying figure of the Earthman raced up the slope, with a hundred aliens at his heels. In the light gravity, Benning made huge, bounding leaps with his Earth muscles. The pursuers came along with a rapid, four-footed lope, like hounds at the chase.

"Come on, Benning!" Traft's great voice boomed encouragingly.

But the aliens caught up with their quarry, pulling him down. Myra shrieked and darted forward wildly, but Shelton held her back.

"Stay here!" he ordered tensely, then swung to the men. "Fire!" he snapped. "Pick them off around Benning!"

A burst of withering gunfire poured down the slope. The aliens staggered and fell on all sides of Benning. Wilting, they began to retreat, but dragged the Earthman with them. Yet the devastating hail of bullets began to tell. Benning was struggling violently to free himself from the dozen aliens left.

And at that moment attack came from another quarter!

Shelton felt that now familiar, crushing numbness grip him. The aliens were projecting the cold force from somewhere! He whirled. A group of the enemy had stolen up from the side, along the slope's rim, with a gigantic instrument whose redly glowing center was focused in their direction.

He yelled in warning and his men turned stiffly to blaze away at the new threat, fumbling to reload their guns. Shelton groaned as he realized their precarious situation. Their motions were rapidly becoming sluggish from the paralyzing effect of the cold force. Soon they would be unable to use their limp fingers and the battle would be over.

To make matters worse, he saw Myra Benning dash away toward her brother, who was being dragged down the slope. She was running right into the arms of the enemy! Shelton leaped up like a wound spring, bounding after her.

Traft, blazing away at the attackers, cursed and leaped after them. He had promised on Earth to stick at Shelton's side at all times. Now was one of those times.

The three racing figures reached the aliens at almost the same time. Myra swung futile fists at them. An alien loomed over her with a snarl, raising his hand to strike. Shelton jammed his gun in the brute's midsection and fired. Another alien wrenched the gun out of his hands. Shelton began swinging his gauntleted fists, with a surge of joy each time a scaly chin cracked under his hammering blows.

Traft had leaped into the fray with his rifle clubbed. Growling, swinging right and left, his powerful blows brought howls of pain from the enemy. Many fell to lie still with battered skulls. But more pressed up from the city, completely surrounding them.

FACED with certain defeat by sheer weight of numbers, Shelton kept fighting automatically. Perhaps the men above the slope could yet turn the tide. But his last hope died when he glanced up and saw them tottering, falling stiffly. Their rifle fire died away to sporadic shots, then stopped altogether.

"Cold force—numb—" came Captain Harvey's choked voice, by the helmet radio. "Can't hold out—"

His swaying vac-suited figure, the last standing, toppled over to lie among those of the other men. Shelton knew that they lay still, unbreathing behind their visors, caught in the pseudo-death of suspended animation. The cold red eye of the cold force projector was turned off, having done its work.

Shouting triumphantly at this victory, the aliens surrounded Shelton and his party and quickly bore them down. Even Traft's great strength was unable to shake off a dozen clinging forms that twisted his arms behind him. Benning was already being carried off, unconscious from his exertions in a cold, thin atmosphere unfit for laboring Earth lungs.

Panting, exhausted, the three Earth people were prodded down the slope to the city—to what fate? Shelton didn't know and was almost past caring. Bitterly he realized they had fallen into a trap. The empty cavern, the way open to the city—it added up to that.

Had the aliens known they would come for Benning, or had they banked on human curiosity? How much did they know of humans? Shelton's brain was tortured with queries.

CHAPTER X

Lorg, Master of Aliens

AS they approached, the unearthlike city was weird with its dim red glow. Windowless buildings of geometric harshness of design stared blackly. Metal was nowhere apparent. Even in his extremity Shelton noticed that.

The four prisoners were taken to a building standing alone on the fringe of the city. There was a hissing sound as a door swung open. Was it an airlock? Such it turned out to be and they were shoved into a lock-chamber, Benning's senseless form with them. Traft quickly lifted Benning in his arms as an inner door opened and they stepped through.

The large chamber beyond, to their amazement, was outfitted with earthly furniture, or more properly, with the fittings of a space ship's cabin—bunks, strap-chairs and even a washstand outfitted with a water tank. Shelton saw the name, *Galileo*, in black letters painted across the tank. A ship of the Exploration Service, reported lost years ago!

Traft had already opened his visor, sniffed at the air. He began stripping off his suit.

"Earth normal pressure and warmed!" he said with forced cheerfulness. "We're prisoners but we may as well be comfortable."

Shelton and Myra followed his example, glad to be free of the encumbering vac-suits. They were not too curious at the moment as to how such a chamber as this existed.

Not much had been spoken among them, since the battle. A depressed silence had weighed their tongues. But now the girl burst into sudden tears.

"It's my fault!" she sobbed. "For making you men go—"

"Of course not!" snapped Shelton. "We just didn't know what we were running into. This thing is turning out to be bigger, more amazing, than we could suspect. First of all we have to revive your brother, find out from him all we can about the aliens."

Hugh Benning's physical condition approached that of a man who had been lying on a mountain top, exposed to its bitter conditions. His skin was blue, his breathing labored. He moaned and twitched at times.

Shelton strode to a medicine cabinet he had already seen reposing in a corner, also taken from an Earth ship. He returned with a chemical warming pad and stimulants that gradually brought the unconscious man around. They waited breathlessly.

But suddenly a large round screen on the wall before them flickered with spangled lights. Though of strange design, it was an opti-screen. A moment later the features of an alien peered out at them, with an expression they could only interpret as sardonic. Large, greenish eyes flicked from one to the other, as though surveying specimens in a goldfish bowl.

"Well," Traft rumbled insultingly, "what are you staring at, you two-footed snake! I wish you could talk our language. I'd—"

"I do speak your language!"

These words, spoken clearly with a precise accent, coming from an utterly alien creature of non-earthly

origin, brought incredulous cries of surprise from the three Earth people. It was more astounding almost than any of the crazy events of the past hours.

TRAFT had lost his voice, his mouth agape, but Shelton recovered and stepped before the screen. He stared directly into the enigmatic, unblinking eyes.

"Who are you?" he demanded.

The alien face drew up in what might have been a smile.

"I am Lorg, a Superior of my people, the Torms. As you would say, I am one of their rulers. You are surprised that I know your language? I have known it for many years. Our instruments pick up your Earth radio programs, and thus I hear your language constantly."

"Why have we been imprisoned?" Shelton demanded. "Retribution will follow, at the hands of Earth authorities, if you hold us against our will!"

He glared at the Alien-Superior in a boiling anger that had been accumulating since the capture.

"I am not easily intimidated," Lorg said harshly. "You will remain here at my will. You are out of touch with the Earth authorities. They will not interfere. You will be treated well."

Shelton cooled down suddenly, passing a hand over his forehead.

"What is this all about?" he asked wearily, as if talking to himself. "Just what do you want with us?"

"You are Dr. Rodney Shelton, of ETBI!" Lorg stated blandly. "We will have much to talk about later."

Abruptly, the image in the screen faded away, with a queer expression that human eyes could not interpret.

"He even knows my name, who I am!" murmured Shelton.

He threw up his hands. It was all an insoluble, soul-shaking mystery. And each succeeding event seemed more cryptic.

"Hugh," Myra Benning was saying in a glad voice, "you're awake! Thank God—"

Benning had finally opened his eyes, with a sharp horror in them, but this died away as he stared around eagerly at their faces. He struggled to sit up, Myra helping, and grinned at them weakly.

"Hello, Hugh!" Traft boomed heartily, gripping his hand. He gave Shelton a brief introduction.

"Glad you're here!" Hugh Benning said fervently. "Three weeks among the Torms—" He shuddered. "You can't imagine the feeling of being the only one of your kind, among aliens—"

Shelton patted him on the back, soothingly. "Take it easy, old man. Begin at the beginning and tell us what happened." He realized that they could not rush the man into telling what he knew of the aliens.

Hugh Benning nodded. He was a small, slight man with a studious air about him. His knowledge of science, as Myra had previously revealed, was extensive. He had been with the Planetary Survey as one of its best technical men.

"I was standing on the rock lip of the cave, at that time you know about, looking in," he finally began. "Suddenly I was choking and turning numb. I felt myself falling, then everything went black. I woke up in a big room, filled with instruments. I thought it was a nightmare when I first saw the aliens!"

Again he shuddered. "I'd been lying in a sort of glass coffin. There were many more around me, in tiers, containing other humans, in suspended animation. I had come out of it for some reason. A big machine stood in the center of the room, radiating bright, colored rays. I think it was some kind of mind-reading process, because I felt my mind being probed, searched, revealed."

HIS eyes were dull with perplexity. "I'm not sure what it was. All I know was that I broke out of my glass container like a maniac and ran from the horrible place. Aliens pursued me. I went unconscious, from the thin air and cold. I woke up in this room. Since then my one thought has been to get away. When I saw your lights at the top of the slope, from the window, I went wild. The

jailer had just come in with food for me. I knocked him down and ran out."

He shivered. "It was cold and cruel to my lungs, but I knew I could stand it for a few minutes. I ran toward you—the rest you know."

His story, brief and jerky, left an aura of horror in the minds of his listeners more by reason of what was left unsaid, rather than what he had told.

"Do you know anything definite about all this?" asked Shelton. "These aliens, and what they're doing, planning?"

Benning's eyes went bleak. "Just enough to give me an awful fright when I think what it might mean!" he said, his voice shocked. "I didn't tell you, but I escaped once before, while I still had my vac-suit handy. It had a few hours oxygen-supply and I figured to get to the surface. I got there, all right, slipping past the guards—to find the ship gone. I was marooned! The guards chased me back down, but I managed to elude capture, hiding in shadows. I suppose I went a little mad, then. I crept past the city—" His voice became tense. "This is only one part of their community. There are other chambers beyond. One is filled with big black space ships. Another with thousands of cold force projectors. Several others"—his eyes were stark—"with dozens of bodies of Earthmen in those glass coffins, in suspended animation. Men from missing expeditions."

"The devils!" cried Shelton, white-lipped. "What—"

"Wait!" Benning went on. "There's something still more significant. I looked down a deep shaft. It seemed to be miles. Down there is a gigantic workshop, and some great machine"—he drew a breath—"some *great* machine! I think it means danger to the whole Solar System!"

"Why?" asked Shelton, startled at the bare suggestion.

Benning shook his head. "I can't tell you why. I don't know. But I do know it represents a great science, perhaps superior to ours!" He lowered his voice. "These people don't use metals! They use plastics. Look at the walls which aren't stone, the window which isn't glass, the whole city which hasn't a scrap of metal in it. They use plastics for everything!"

"Plastics?" echoed Shelton. "Why should that—"

"The science of plastics is not a simple one," Benning said, with an assured scientific air. "It is just beginning on Earth. We know of celluloid, cellophane, bakelite, and so on. They are the basic simples of a possible industry supplying every material need of mankind. These people have gone into it deeply. They have plastics harder than steel, clearer than glass, more lasting than stone! And all made of chemical ingredients at low temperatures. They don't have to use elaborate blast furnaces, coal, power, or dig ores. Theirs is a laboratory civilization if there ever was one!"

He waved a hand suddenly. "It's mainly conjecture on my part, but"—his face went haggard—"I have the feeling all this activity within Iapetus spells danger to the Space Empire. It broods in the air here. It—"

"The Empire can take care of itself!" Traft burst out belligerently. "When the time comes. Why, these fish-eyed aliens haven't even guns, if it came to war. Earth's Space Navy could surround Iapetus and bottle them up."

"Don't underestimate their cold force weapon," Benning said quietly. "It can be as effective as a heat force. They're probably developing it day by day. As for Iapetus, this is not their native world!"

Shelton nodded. "I surmised that. Iapetus is barren of native life. But where have they come from?"

Benning shrugged. "Uranus, Neptune, or Pluto. They are a race inured to cold, hating light. It must be one of those three."

"Or all three!"

Shelton was suddenly pacing up and down. Some of Benning's conjectures had seemed wild, the ravings of a man whose imagination had been touched off by three weeks in a strange, dark world of aliens. But now Shelton felt

that the true scope of it might be still more incredible.

"Saturn," he said, "has been Earth's frontier. Beyond lies the unknown. I've seen the official records, not often revealed. More than half the exploration ships that have gone beyond Saturn have never returned. 'Natural hazards', the official epitaph is. I wonder!"

Traft tied things together, sweepingly. "Looks like the aliens, on Pluto, Neptune and Uranus are expanding inward, while Earth is expanding outward. Where the two meet, here at Saturn—hell will pop!"

"We're painting a pretty lurid picture," muttered Shelton, dazed by the tremendous implications of it.

He shook his head. It might all be a poisonous mushroom blooming from the spores of undigested facts. They must get down to basic facts. He turned to Benning.

"But why has this room been prepared, with Earth conditions, for live prisoners?"

"I can't guess," admitted the technologist. "They've fed me, kept Earth-pressure here and warmth. They haven't mistreated me. I've just been sitting here, brooding, marooned, surrounded by aliens, thinking—thinking—"

He was sobbing suddenly, and Myra comforted him. They realized what he had gone through. It was plain in his sensitive, lined face; the marks of an experience no human could have passed through without mental scars.

CHAPTER XI

Dash for Freedom!

LORG, the Alien Superior, sat in his seat of authority. He turned as Murv, his second-in-command, entered and advanced with quick tread. Murv stopped before him and saluted respectfully.

"Lorg," he said, in their own speech, "we must try arbitration with the Earthlings, now that the hour draws near. They are more powerful than you think. That has been part of our plan from the first, and for that reason the Earth-conditioned room was prepared. You have in it now their Dr. Rodney Shelton, a high official, with a voice of authority. Through him you can arbitrate with the earthly government."

As the Superior shook his head, the spines of his head swayed.

"I think it will be useless at this point," he objected. "We are ready to strike. After the first point in our plans is carried out, then will be the time to talk. They will be impressed."

"They will be enraged!" Murv insisted. "Take care that you do not ruin everything, Lorg! Best that you arbitrate now. And"—he spoke firmly—"do not make your demands too high!"

"Who are you to speak thus to me?" shrilled the Superior, rising angrily.

"The voice of those of our people who do not want a war with the Earthlings!" returned Murv, eyeing Lorg steadily.

"All right!" he snapped. "I will attempt arbitration. But I make my own demands, and follow my own judgment thereafter!"

Once again the opti-screen in the Earth people's prison chamber flared with pulsing lights. The Alien Superior gazed down at them, singling out Shelton.

"Dr. Rodney Shelton," began Lorg, "you have authority, I believe, that can connect directly with your supreme Earth Government? What you say, they will believe—and consider?"

"Yes," snapped Shelton. "But how do you know that? How—"

The sounds made by the alien might have been amused laughter.

"Do not be astounded," he murmured. "We have been in contact with Earth affairs for a long time. Not only through radio, but by gleaning information from Earth minds—those whose bodies we have in suspended animation. We developed the cold force for that purpose, as well as for a weapon. The cold force is a pseudo-magnetic field that absorbs all electrical nerve currents in the human

Greeley followed with two more of the stricken men (Chapter I)

body. The nerves become dead, frozen, but without affecting any of the other organs.

"Those bodies in suspended animation are a library of information to us. We are far more fully aware of your affairs than you would believe possible! We know much of your science, history, social structure, and your interplanetary program of expansion. Daily, we gather more information, with our psychic-extractor apparatus."

Shelton was tense with horror at the thought of human bodies kept in the pseudo-death, like mechanical records, for the aliens to delve into their minds.

"I THINK I can promise you," he said harshly, "that when Earth finds out about this, you will be blasted out of existence. You have done things that make you a bitter enemy of mankind!"

"Those men are unharmed," returned the alien, half apologetically. "The psychic-extraction does not affect them. I would not wish to earn the wrath you promise. I wish to open arbitration with Earth, in fact!"

"For what?" Shelton asked bluntly.

"For control—absolute, undivided control—of certain planets. You might call it a ceding of planets!"

There it was, staring them starkly in the face. Shelton was staggered a little, though it had not been a com-

plete surprise. He was being asked to inform his home authority that an unsuspected outside power, an alien race from somewhere beyond Saturn, wanted planets for its own empire! It was utterly fantastic!

"Which planets?" he managed to query, trying to keep cool.

"Pluto, Neptune, Uranus, Saturn and Jupiter—and all their moons!" Lorg calmly informed. "My race is very prolific. The three outer planets are ours in all but name already; our people inhabit them. We are asking only for recognition there of what already is ours. But Saturn and Jupiter, in addition, must be ceded to us by Earth!"

The four Earth people looked at one another. Was this some monstrous joke, spawned in the mind of an alien who aspired to an impossible tin-pot empire?

"You can't be serious!" retorted Shelton. He suddenly laughed shortly. The thing was ridiculous!

Lorg's alien features drew up tightly in what was obvious even to Earth eyes as outraged anger.

"Cease your laughter, Earthling!" he snarled, his repugnant face thrusting forward in the screen. "Those are my demands. If I must, I am prepared to take Saturn and Jupiter. The day of earthly dominion over them is finished. I, Lorg, say it!"

Shelton was quickly in the grip of equal anger.

"Take them?" he blazed. "Against all the Earth forces? You are mad, Lorg! Earth might conceivably waive jurisdiction over the three outer planets, since you say your race inhabits them, but Saturn and Jupiter are out of the question!"

Lorg had turned his face and spoke to someone unseen by the Earthlings. Nor could they guess that what he said was: "You see, Murv? Arbitration is impossible."

They heard another voice answer, but did not understand when Murv answered in the alien tongue:

"Your demands are too high. Saturn and Jupiter are theirs!"

Only the tone of Lorg's reply, "You anger me, Murv. Go!" was understandable to the four as Lorg turned back to the mystified Earth people.

"We shall see about arbitration, Dr. Rodney Shelton!" he said ominously. "Perhaps Earth will soon be glad to do so, at my terms!"

"Wait!" said Shelton thoughtfully. "Perhaps it would be best after all. I'll do it, Lorg!"

The other three stared at Shelton. Was it possible he had been cowed by the alien? He seemed to look so. The Alien Superior peered at him narrowly.

"I know what goes on in your mind, Earthling," he said shortly. "You would simply make that an excuse to contact Earth and have warships come winging. Fool! I would know of a way to prevent you. But no matter now. I have decided not to arbitrate at this time!"

His image vanished.

SHELTON lurched away from the opti-screen, sank weakly into a chair. The stark revelation of the past few minutes was almost more than the human mind could accept without, he felt, going mad.

"Holy Jupiter!" Traft was exclaiming. "Wants five planets for his empire, and apparently is ready to fight for them." He balled his fists. "He won't be so eager after a taste of the kind of war Earth people put up in big doses!"

"That's the trouble!" Shelton's voice was worried. "Think once. What fighting forces have we? Actual fighting forces? All the Space Navy has had to worry about is traffic duty in the spaceways, rescue of stranded ships, and battling a few pirates. In total, the Navy consists of only a dozen battleships, built just in case, a few hundred Space Rangers, and a few thousand lightly armed ships that haven't fired a gun in years."

He made a sweeping gesture. "Suppose the enemy, planning long, have thousands and thousands of ships—" He stopped, appalled at his own suggestion.

Traft was unworried. "What good would superiority in space battles do them, granting that? We have *people*

on Jupiter and Saturn. Their space ships couldn't fight ground forces. They'd need ground forces. And I doubt they can stand up under the sun without going blind, and getting a heat stroke. Unless they were bio-conditioned. But they don't know about that."

Shelton suddenly went cold. Unless they were bio-conditioned! Was that where *he* came in, in the aliens' plans?

He jumped up.

"Talk is useless," he ejaculated forcefully. "Earth must be warned! Earth must strike first—wipe out this alien nest! If we could only get in touch with our men in the ships, on the surface—"

He strode to their vac-suits and grabbed up his own, with the helmet-radio attachment. He snapped it on, holding the helmet upside down, and spoke tensely into the tiny microphone.

"*ETBI-Fourteen*, attention! *ETBI-Fourteen*, attention! Shelton calling!"

He tried this for long minutes before he gave up. "Not enough range, as I expected," he groaned hopelessly. The helmet-radios were for suit to suit converse, at short ranges of a few hundred feet. He whirled. "We've got to get to the surface!"

"Guards outside," muttered Hugh Benning. "They'll be more watchful since I made my break.

"Never mind about guards!" Traft rumbled grimly.

"But they'd run us down," Benning said in a monotone. "And we have no guns."

The four looked at one another helplessly. They had priceless, vital information that should go to Earth, and no way to transmit it.

Shelton paced up and down with a concentrated frown. "Get thinking, all of you!" he urged. "One way or another, we've got to escape!"

Traft made a mental inventory, aloud. "No guns, no lights, no weapons of any sort. We're outnumbered a hundred to one. We have to have some way of holding them off for about ten minutes, while running up the slope."

"Light would do it," mused Shelton. "Bright light alone! Their eyes are extremely sensitive to light, and therefore blinded by what to us is normal light."

TRAFT was looking around. "There's not a thing here to help us," he growled. "No flashlights, candles, or even matches."

"Matches!" murmured Benning tonelessly. "They would be useless anyway. Things don't burn in the thin Iapetus air!"

Myra Benning, less despondent than her brother, pointed at the globular bulb hanging from the ceiling, shedding its pale reddish glow over the room.

"Can we use that?"

Shelton shook his head. "Too dim. Some kind of cold light, without blue rays. We need something with strong blue rays. They are the strongest." He snapped his fingers suddenly. "Listen, all of you!" He held up the helmet-radio at which he had been staring. "If we can find a way to short the battery and produce an arc, we'd get a bright light, much brighter than our flashlights were. An arc would blind them so thoroughly we'd have a chance to get away! We'll try it! How about you, Benning? Can you go out there without a suit again?"

Benning nodded. "I'll go as far as I can."

"And after that I'll carry you!" finished Traft. "Let's get set—ready for them when they come with food!"

When three aliens entered with food a little later they let out hoarse cries as three determined Earthmen attacked with whirlwind speed. Benning tripped one and struck him on the head with a table leg. Shelton knocked his adversary out with a clean uppercut. Traft disposed of the third with a hammerlike blow to the forehead. Taken by surprise, the aliens were easy prey, although in a normal fight they might have been more effective, using their taloned hands.

"Come on!"

Shelton hustled Myra into the lock left open by the aliens, the others following a moment later. The outer seal flung open, automatically, after the inner seal had closed. They stepped out.

Hugh Benning gasped as he met the frigid, sparse air outside, but set his lips grimly. A dozen outside guards stared for a moment in surprise, then leaped forward. Shelton was fumbling with his gauntled hands at the two bare wires he had previously drawn from the radio coils, at the peak of his helmet. He touched the wires and then drew them slightly apart.

A blinding blue radiance shot from the contact as hot sparks sizzled across the gap. In the thin air, conditions were ideal for a high voltage spark. The advancing aliens let out painful shrieks as the glaring light bathed their light-sensitive eyes. They flung up their arms and staggered back.

Shelton set the lead away from the city, up the slope. It was a long stretch. If the arc lasted till the top, they were not likely to be cut off. They would have to take their chances with any cold beams.

As they bounded up the incline, the whole city seemed to burst into movement. Aliens rushed from all sides, shouting in their queer, dissonant tones. But the blazing arc at the top of Shelton's helmet kept them off. They would approach within thirty or forty feet, try to run against the light with face averted, and finally reel back, rubbing their tortured eyes.

TO them, Shelton knew, it was like running toward a hot, incandescent furnace whose beams would burn their eyes out, and whose heat crackled on their scaly skin. Skin on which water at just above the freezing point would have felt like live steam!

Once in a while the arc sputtered, and Shelton had to reach up quickly to adjust the gap. Several times, the instantly numbing force of a cold beam struck at them and made them stumble. But each time it died away as quickly. The operators were having a hard time focusing on what to them looked like an unveiled sun.

On and on they raced. Time and again the aliens would have cut them off except for the blue-bright ball of fire they could not face. But gradually the arc weakened. The small batteries were being quickly drained. With a hundred feet to go, the arc flickered out entirely.

Instantly the aliens leaped forward, in the dark which was normal to them. Traft, at the rear, began lashing out with pummeling fists, fighting them off. A dynamic whirlwind, he protected the other three completely. They gained the top. Shelton whirled to help Traft, but saw he wasn't needed. The big pilot had just picked up an alien bodily and flung him among the rest. Then he dashed up, grunting exultantly.

Brazenly he stood for a moment at the slope's rim, taking a camera snap as a gesture of defiance to the aliens.

"You and that fool camera!" barked Shelton. "Come on!"

A cold beam bit at their muscles, but they staggered through into the corridor leading to the surface. Here they knew they could easily get away, protecting their rear. The aliens did not even follow, as though shirking the prospect of facing the ferocious Earthmen in a narrow space.

Hugh Benning let out a bubbling gasp suddenly and collapsed. Traft caught him and swung him to his shoulder without lessening his pace.

"Made it!" panted Shelton. "Though we'll have to watch for guards at the cave mouth."

CHAPTER XII

Message to Earth

WHEN the glow of the city behind them died away, Stygian gloom slowed them down. Shelton fumbled with the wires and managed to eke a little more current out of the batteries, enough to give a dim, sputtering radiance. It served to warn of

outjutting rocks and treacherous underfooting.

But finally the glow of the cave mouth appeared ahead, like a steady candle, and they entered the large cavern. The guard detail of aliens, evidently warned of their coming, had their path blocked with their cold beam projector. Its paralyzing grip touched them.

Shelton raised his voice in a shout to the two Rangers that had been left on guard. Two flashlight beams stabbed into the cavern, centered on the Earthmen for a minute and then swung to the aliens. Guns spoke and with wild cries the aliens flung themselves flat. Shelton and his party raced past.

The two Rangers greeted them warmly.

"Glad you're back, sir," they said, saluting Shelton. "We were about to organize a search party. Where are the others?"

"No time to explain now!" Shelton said shortly, and headed for the ship.

The sun had set. The desolate topography of Iapetus was eerily lit by a blend of starlight and the reddish glow of Saturn hanging like a moon in the sky. The scene was quiet, peaceful. Shelton found it hard to believe they had just returned from a bustling city deep underground. It had all been like a nightmare, tumultuous and unreal.

Within the welcome interior of the *ETBI-14* again, the bruised and battered party took off their vac-suits, and basked in the warmth of the ship. Shelton left all explanations for Traft to make and dashed for the pilot's cupola. He jerked over the radio stud.

"Dr. Rodney Shelton of ETBI calling from Iapetus!" he barked into the microphone. "Titan station, please answer immediately!"

He repeated the call several times, using the full power of the ship's radio. Waiting for the return call, he fidgeted nervously, cursing radio operators who couldn't see blinking signal lights before their very eyes. At last a rather sleepy voice answered:

"Titan station. Go ahead, Dr. Shelton."

"Emergency!" he snapped. "Get this and get it right! Call the Navy outposts, both yours and on Rhea, and say I want every fighting ship available here at Iapetus, as soon as possible. There is to be no delay. This is a matter of vital importance. Tell them an alien menace is here that requires their presence. Every fighting ship! Is that clear?"

His keenly stirred mind seizing on the smallest details, Shelton timed the reply just right—forty seconds from Titan, at opposition to Iapetus, three million miles, back and forth.

The operator's voice was no longer sleepy, but puzzled. "This is such an unusual request, sir!" he objected. "Are you sure —" He broke off. "Please give me opti-screen contact, Dr. Shelton. Routine, you understand."

Shelton growled, but was aware that the operator had the right to be startled, and careful. This was perhaps the most momentous call that had ever hummed across the ether lines. Shelton switched on the iconoscope and adjusted its electrodes rapidly to catch his face clearly in direct focus.

"NOW," he declared, knowing he would be recognized, "I want those ships immediately. Then call me back." Just to make it stronger and avoid any delaying red-tape, he added: "If you question my authority, you're questioning the authority of Extra-Terra Bio-Institute! Understand?"

Forty seconds later: "Yes, Dr. Shelton! I'll call the outposts immediately. And then call you back." The operator's excited voice clipped off.

Ten minutes later his signal light flickered and Shelton rushed back from the pilot port. He had been staring out at space, beyond Saturn, wondering where out there lay the alien civilization that had sprung upon the ken of man with such blinding, threatening swiftness.

"Titan station reporting," said the operator alertly. "Both Navy out-

posts have answered, Dr. Shelton. They will send all available ships as quickly as possible, though it will take a little time to organize the details. The Rhea outpost says it will have five Rangers there in about eight hours, others to follow. Anything else, sir?"

"Yes," Shelton stated. "Put me through on a line to radio-central, Earth, right away."

"Go ahead, Dr. Shelton!" acknowledged the Titan operator, after the appropriate time lapse.

Shelton spoke slowly and distinctly.

"Radio-central, Earth. Dr. Rodney Shelton of Expedition Ship *ETBI-Fourteen* calling. Attention, Director Grant Beatty, by transcription, if necessary. Say this: 'Director Beatty, I've been on Iapetus just ten hours and in those ten hours the incredible has happened. Aliens, intelligent beings, are on Iapetus. That's a bare, unbelievable statement. I know it will shock you.'"

Shelton went on to give the details, as far as he thought necessary.

"'And so, Director,' he concluded grimly, 'this alien menace has been flowering secretly on the three outer plants. They are looking inward. They have a foothold in our empire, on Iapetus. They must never get any further! I don't know what powers the aliens have, but they must have a highly developed science. It is evident from what we've seen and heard. Lorg, the Superior, as he calls himself, radiated confidence that he could get what they wanted, by force if not arbitration. I can only describe him as a devilish character, capable of devilish plans and deeds!'"

Carried by humming radio waves across the deep gulf of interplanetary space, Shelton's voice became hard, inflexible.

"'My idea is to force their hand. I've called for all available fighting ships from Titan and Rhea. Send from Earth a fleet of whatever ships can be spared. If necessary, the aliens must be blasted out of Iapetus! I know, Director Beatty, that you'll want me to leave Iapetus immediately, when you hear this. But I'm staying! Don't waste breath begging, demanding or cajoling me back right now. I'm here to see this thing through. I'll open negotiations with the aliens as soon as the first ships arrive. I'll await acknowledgment of this call.'"

SHELTON turned away from the radio, heaving a great sigh. Earth had been informed. Regardless of what happened to him, the most important thing had been taken care of.

As he stepped away, the signal light flashed, signifying another call. Shelton turned back, and started, as the strangely leering face of Lorg, the Alien Superior, rippled into the glowing opti-screen!

"You made a clever escape, Dr. Rodney Shelton!" remarked the alien imperturbably. "You Earthlings are resourceful. I also overheard your recent radio message." The voice became ominous. "It will avail you nothing, Earthman! I am ready to strike. You will be too late with your attack!"

"We'll see about that!" Shelton drawled easily. "When our armed space ships are ready to blast away. If you attack me tonight, remember that I have an armed space ship with me, and several expert gunners."

"I will not attack you," scoffed Lorg. "It is not necessary, in the least." A queer expression flitted across his repugnant features, and the hoarse cackle that came from his lips made Shelton's nerves grate. "I say only one thing to you. Watch at dawn!" He cackled again, ominously. "Watch at dawn, Earthman!"

Down in his chamber, the Alien-Superior turned from his screen when Shelton's face had vanished.

"Go," he commanded his aide. "Spread the word. The hour has come!"

The aide saluted and sped away, his face gleaming.

Murv, who was there, pressed his lips together. "You have made your move, Lorg," he said quietly. "Let us hope it was the right one. You have incurred the wrath of the Earth people. I have often told you of their

dangerousness when aroused. The chance for peaceful arbitration may be lost forever!"

Lorg's ruthless face flared with anger. "Murv, you annoy me with your childish fears. Go!" He added a threat: "And take care that I do not depose you from all authority one of these days, if you try to hinder me!"

Murv turned away with a shrug, his face stony. . . .

In deep thought, Shelton made his way from the pilot's cupola to the main cabin. Why was the Alien Superior so confident? What did he have up his sleeve? Watch at dawn! What was going to happen at dawn?

The occupants of the cabin looked up at Shelton's preoccupied, haggard face. Myra Benning had nursed her brother back to consciousness, but he lay weakly in a bunk, still breathing stertorously. Traft had just finished telling the story of their experiences underground. The listening men were looking at each other in shocked horror at the fate of those who had not returned from the cavern of alien menace.

Shelton briefly gave the details of his radio calls. Then he counted his forces. The three engine men, two ETBI men, two Rangers here and two left as guard in their ship—twelve men, including himself. And a girl.

He turned to the Rangers. "You two go back to your ship. Keep one man on guard in case anything pops during the night."

They saluted and left. When the air-seal had hissed shut again, Shelton swung on his two ETBI men.

"YOU'VE made preliminary tests of the Iapetus conditions—enough to give a rough approximation of bio-conditioning steps?"

"Not quite finished," answered one of the biologists. "Couple hours' work on it yet."

"Then we'll finish it now," Shelton decided. "We must transmit the data

WAR BETWEEN THE WORLDS!

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to Earth, in case it comes to the point"—his eyes blazed—"where bio-conditioned fighting men are needed to rout out the aliens. Mark, you stick at the radio, for any calls. You three engineers keep watch at the ports. Lorg said he wouldn't attack us, but I don't trust him. They might try to come sneaking up in the night. Miss Benning"—his voice became gentler as he turned to the worn girl—"you'd better get some rest. This has been a trying day for you."

"I'm going to help you, Dr. Shelton," she quickly interposed. "Hugh's asleep and won't need me."

Shelton admired the way she had drawn herself together.

"Incidentally," he said, "you've done a g r e a t service to the Empire! Through your search for your brother, the aliens were discovered sooner. Look at it that way, not that you led brave men to a living death. They can yet be rescued. But with the alien menace uncovered, we've stolen a march on them!"

The girl's eyes brightened. It had not been pleasant to think of her part in the half-tragic events since the landing.

"But we've work to do!"

Shelton led the way to the small but completely equipped laboratory in the back of the ship. They plunged into their work. The Iapetus air was checked and rechecked for density, pressure and mean temperature. Cosmic radiation was recorded, by means of a sensitive Geiger counter. An anesthetized guinea pig was put in a pressure tube, dosed with adaptene, and his reactions to Iapetus' conditions noted, his blood count taken.

Rough, hurried approximations they were, but Shelton knew he must race against time. Data went down rapidly under Myra's flying fingers.

CHAPTER XIII

At Dawn!

AS soon as Traft's voice thundered down from the pilot room, announcing the return Earth call, Shelton hastily grabbed up the single record sheet and raced up.

"Mark," he demanded, rapidly adding a few words at the top of the paper, "you know the secret code of your Planetary Survey Service?"

"Like I know my own name!" assured Traft readily, pushing aside his dry chemical developing kit, with which he had been making prints.

"Code this!"

Shelton turned to the radio. Director Beatty's forceful face, half twisted out of shape with amazement, was in the screen. Only three hours had elapsed since Shelton's call. It was probably a record for a return call across the stupendous nine-hundred-million-mile stretch between Earth and Saturn.

"Director Beatty calling Dr. Rodney Shelton on Iapetus," said the image's lips. "Your message was received in full. I need hardly say it's the most startling news I or the world ever received. An intelligent, unsuspected alien race in the Solar System—an underground city at the doorstep of the Empire—miraculous science! If it were anybody else but you reporting that, Shelton, I'd refuse to believe it!"

A hand reached up to mop a sweating brow. "An armed Earth fleet is already being organized. They will arrive at Iapetus in four days, at multiple acceleration. We can't tolerate any subversive program, defying our jurisdiction on the planets. Saturn and all its moons are an official part of our Empire. The aliens must leave, or be driven away!"

The Director's eyes stared out commendingly at Shelton. "Everything you've done is right, Shelton. But don't go any further. You've exposed the aliens. When the first armed ships arrive, from Rhea, simply have them on guard. Officials will arrive with the fleet from Earth, to take up negotiations." The eyes twinkled slightly. "I should command you to leave for E a r t h immediately. However, I won't, to save you the embarrassment of a court martial later. I'm trusting you not to be reckless."

His voice became serious. "But this is a grave situation facing the Empire. How grave, I suppose none of us knows yet. Report to me the instant anything new comes up. Signing off."

The bearded face faded from the screen, but Shelton hurriedly called the Titan relay station for another line to Earth radio-central.

"Director Beatty!" he called when the connection was completed. "After I sent my message to you, Lorg, the Alien Superior called me! He had listened in. He is probably listening now! So I'm sending the rest in secret code, Planetary Survey."

He went on in the code that Traft was rapidly transposing from the record sheet, calling out letter by letter swiftly and clearly. The decoded message ran:

Important to leave nothing to chance. Have thousand men bio-conditioned for Iapetus, in case needed to storm underground city. Data follows.

Shelton's voice droned on for another half hour, with the laboring Traft barely able to keep ahead with his coding. Finally it was done, and Shelton heaved a sigh of relief.

"There!" he said. "We're another jump ahead of the aliens!"

DOWN in the main cabin, a tantalizing odor met them. With the limited facilities of the ship, Myra Benning had managed to prepare an appetizing meal. Shelton was hungry, despite the cheerless situation. And for awhile they were able to keep up a dinner conversation free of the thoughts uppermost in their minds, relaxing somewhat from their tenseness.

"We have four hours till dawn," said Shelton, consulting the chart of Iapetus' day-and-night periods. He yawned. "The ships from Rhea will be here two hours later. Let's get some sleep till then. We'll have one man on guard, turn about."

This arranged, they went to their separate bunks. Shelton threw himself down, fully clothed. His head hummed with the breath-taking events that had burst like a bombshell into the course of things. Many things had been answered since the day on Earth when the ship *Tycho* had landed with two alive out of a crew of ten. But many things remained to be answered. In what bizarre way would they be revealed?

Shelton's nerves quieted as he became drowsy. He felt satisfaction in how it had all turned out so far. In a few hours armed Earth ships would arrive, to hold the aliens at bay. Yet in the back of his mind, like a haunting refrain, thrummed Lorg's strange words: "Watch at dawn!" What could it mean?

He turned over. He had the watch at that period. He would watch at dawn. He slept. . . .

A hand shook Shelton's shoulders. He awoke from a troubled sleep, nerves throbbing.

"Your watch, sir," said the engineer whose vigil was over.

Shelton arose and made his way through the dimmed cabin to the pilot's cupola, where a sweeping vision all around the ship was possible. He stared around at the desolate, barren landscape, glinting somberly in starlight. Saturn had set in the sky of Iapetus. Soon the Sun would rise.

Shelton pressed a hand to his forehead, wondering why his nerves should be jangling so much. Suddenly he started. Was it his nerves, or was it his whole body, the whole ship, and the very ground it stood on? Abruptly Shelton realized that was so. A subtle vibration trembled through the entire ship! He was aware now, too, that he had felt that steady tremor in his sleep, for at least an hour!

He pressed his feet firmly to the floor. The strongest vibration came from below, from the ground. Was it some sort of Iapetus quake? It felt as though the whole satellite were quivering and trembling. The aliens —underground! Did it have any connection with them?

The Sun rose. Small and feeble though its reflection was, it made an appreciable contrast to dark night. Shafts of light speared down, dispelling shadows, gleaming from crystalline peaks. It was strangely, hauntingly beautiful, this sunrise on an-

other world, but Shelton's mind kept humming those relentless, maddening phrases: "Watch at dawn! Watch at dawn!"

Shelton glanced at the chronometer above the pilot's keyboard. And a startled cry burst from his lips.

The dawn had been ten minutes late!

The electrically-operated clock could not be wrong. The chart of Iapetus' rotation could not be wrong. Yet the sun had peeped above the horizon fully ten minutes behind time!

SHELTON'S face was white, drained of blood. His hands were trembling fitfully. His heart skipped a beat, then began to pound furiously. For of all the things that man depends on with a blind faith, it is the clockwork of the heavens. The certainty of sunset and sunrise on split second schedule, for ages on end without fail, whether on Earth or any other world.

"What is it, Rod?"

Traft spoke from the door. The others were behind him, awakened by his involuntary cry, which had resounded through the still ship.

"Ten minutes late!" Shelton whispered hoarsely. "The sun—"

"What!" roared Traft, blinking dumfoundedly. "You must be wrong, Rod! That would mean the rotation of this whole satellite has changed!"

Hugh Benning ran forward, grabbed up the space sextant and trained it, then compared its readings to the chart of Iapetus' rotation and revolution. The others waited breathlessly. Finally he set the instrument down carefully, and turned a drawn face.

"It's true!" he breathed. "Impossible, but true. The rotation of Iapetus has been slowed and—"

He let out a sharp cry and flung a hand up, pointing. Saturn had risen above the horizon, opposite the sun.

"Saturn just set!" groaned Shelton, bewildered. "How can it rise again, and go the opposite way? Even the slowing of rotation couldn't account for that!"

"No," Benning croaked. "It means that Iapetus' rotation and revolution *both* have changed! Iapetus has left its orbit!"

Traft lunged forward, picking up the sextant. He angled Saturn and the sun, put the figures down, and ran his finger down the trigonometric scale fastened above the pilot board.

"We have a velocity of a hundred miles a second, relative to Saturn, with the sun as a fixed point," he announced. "The orbital velocity is supposed to be only two miles a second. So Iapetus is streaking out of the orbit, at a tangent, in the general direction of—Pluto!"

The appalling fact was like a living force.

"We're on a runaway satellite!" Shelton summed it up as calmly as he could. "But worlds don't just suddenly slip out of their orbits, after ages of cutting the same groove, obeying the laws of gravitation. Iapetus has been *forced* out—by the aliens! This vibration going through the whole satellite—"

"The Great Machine!" Hugh Benning cried wildly. "I knew it meant something unbelievable. That great machine, buried deep, motivates the satellite as though it were a space ship! Now you'll believe me, Shelton, that they have a miraculous science—incredible science! Greater than ours!"

Shelton jerked erect. "I wouldn't say that," he fiercely defended. "More developed in one direction, perhaps, but not necessarily superior. And they're not going to get far with this, whatever crazy scheme it leads to. When the ships from Rhea arrive—"

HE stopped, his jaw suddenly dropping.

"If they arrive!" croaked Benning. "Two hours from now they'll arrive at the point in Iapetus' orbit where Iapetus used to be! They'll look around, dazed, and recheck their course chart. They won't find an error in that. They'll look for Iapetus, but it will only be a pinpoint star by then, no different from the other stars."

"Stop it!" shouted Shelton, but he knew Benning was right, of course.

Shelton knew Benning had spoken

with inexorable scientific exactness. At their present velocity of 100 miles a second, they would be three-quarters of a million miles from where the ships would arrive. At that distance, small Iapetus, much smaller than Earth's moon and three times further away, would be just a bright, starlike object. The ship's men would have no reason to single it out as the lost satellite, from all the other bright stars of open space.

Shelton dived for the radio. "What's the matter with me?" he muttered. "Can't we tell them what has happened and where we are?"

But as soon as he snapped the switch, a sinking feeling came over him. The speaker blared forth with a confused crackle, as though all the static in the universe had poured into its coils. Some powerful interference was jamming the ether lines.

Shelton tried desperately, twisting the rheostat to full power.

"Iapetus calling the Rhea ships! Please answer!"

But no answer came. No answer could, it seemed, worm through that barrage of interference.

He gave a glad cry suddenly, that as quickly changed to startled disappointment. The face of Lorg, Alien Superior, blinked into the opti-screen. His voice came through clearly as the discordant noises became a rustling background. His powerful wave, from so near, was able to work through.

"You can't signal those ships, Dr. Rodney Shelton!" the alien said with aggravating conviction. "Nor any ship, unless it should happen to pass within a few dozen miles. But no ships are going to blunder that close. Iapetus is lost to the Solar System. We are motivating it away, by means of our Great Machine, underground. Our scale shows an inch of displacement each second, or a rate of a hundred miles a second away from Saturn. I was not—what is that Earth word?—bluffing, was I, when I said your planned attack would come too late?"

Shelton glared at him, unable to speak because of rage, frustration and choking hatred. He had never felt such a burning hate before. His fists clenched till his knuckles were white.

"I see you cannot speak," the alien mocked. "You are too stupefied by what has occurred. And you hate me! It is the hatred of inferior beings for one superior!"

Shelton reached to snap the screen off.

"Wait!" The Alien Superior went on. "Do not try to leave this moving satellite in your ships, which would be your next move. Disaster will follow if you try. There is a stricture of space, a warp, surrounding the globe. Your ships cannot pass it. It would take far more power than your engines produce. You are prisoners—or guests. You will not be harmed. I have need of you later, Dr. Shelton!"

The repulsive alien visage glided out of the screen.

CHAPTER XIV

Trapped on the Runaway World

THERE was silence within the *ETBI-14* for a moment. Then Traft's voice boomed out.

"It's a bluff!" he scoffed. "About not being able to leave."

"It may or it may not be," Shelton said slowly. "But I think it has to be tried. It's our only chance to get word to the System. And we don't know what that devil has up his sleeve. The Ranger ship must be used. It's lighter—more take-off power. Power is the thing needed. To judge from Lorg's warning, more power than any ship has."

"There's one way to power up a ship specially at take-off," said Traft. "By resetting the timing of the rockets, and hand-pumping fuel at all the lines. I'd need"—he counted around—"every man here except two!"

Shelton faced the company haggardly. "Every man except two—to defy death!" he said wearily. "The first attempt will probably be the only chance to try it. Yet it has to be tried, doesn't it?"

They all nodded. Shelton went on: "As for the two men—"

Traft interrupted. "Benning's one; he's sick. You're the other, Rod!" The big pilot spoke frankly, facing his friend. "If the ship cracks up, you'll at least be left here. And you're the one most qualified to outwit the aliens, in some other way." He grinned wryly. "It's a sort of devil-and-the-deep choice. It's even-Steven either way, Rod!"

Shelton saw the logic of that, though at first it seemed he was being asked to shirk taking his chances.

"All right," he said gruffly.

It was no time for heroics, though Solomon himself would not have been able to say which was the most heroic choice.

Traft, as pilot, took charge, ordering the men into vac-suits. After solemn farewells, they trudged to the Ranger ship.

Shelton, Myra Benning and her brother, alone in the *ETBI-14*, watched from the pilot's cupola. After half an hour, while the Ranger ship's engine had been idling, and the men instructed, Traft's big, cheery face appeared in the opti-screen, behind the visor of his vac-suit.

"All set!" he said.

Shelton had thought of a hundred things he wanted to say to his friend at this final, chilling moment which might be their last together. But something choked him.

"Good luck, old man!" was all he could bring out, in a dry, hoarse voice.

"Watch me ram through that damned warp of his!" promised the big pilot, waving nonchalantly as though departing on a pleasure cruise. But they could see the set grimness behind his wide grin.

He stared at Shelton oddly for a moment, then.

"You know where my camera is, Rod," he said softly. "It's yours—in case."

Shelton nodded blankly. It was the big pilot's way of acknowledging the moment.

His image flickered out.

Shelton watched tensely. It was their last chance now to get word to the Rhea ships, so that the runaway satellite could be traced. If this failed, Lorg and his aliens would have escaped entirely, free to carry on their plans, whatever they were. The Ranger ship must get through that threatened, invisible barrier. Simply *must*.

THE long, sleek ship out there trembled. Long tongues of searing flame shot from its underside. It catapulted up suddenly, into the sunshine, like a roaring monster. Rockets blasted away at the rear, to give it a forward momentum and thus tear away from Iapetus' gravity at a tangent. Gathering speed swiftly, it launched itself into the sky.

Shelton held his breath. Where would the mysterious "warp" manifest itself? What was it? What would it do?

Dr. Shelton tried to quiet his growing horror. Traft was at the controls; big, powerful, indomitable Traft with the strength of a bull and the cunning skill of piloting in the spaceways. He would win through!

The sleek Ranger ship hurtled upward, driven by powerful blasts seldom used in take-offs. Against an unknown force, Traft was pitting every ounce of ramming power the ship had. Split seconds passed with the drawn-out beat of hours.

A gasp of horror was wrung from the lips of the three watchers in the *ETBI-14*. The Ranger ship, drilling into the sky nose foremost, stopped almost abruptly, a thousand yards above. As though it had struck a wall of steel, the nose flattened and bent. Shiveringly, the rest of the long torpedo hull telescoped upon itself with a terrific grinding noise that even the thin air of Iapetus carried as a grating thunder.

Shelton stared with fixed eyes that refused to turn away. The wreck dropped like a stone, a broken, twisted thing without semblance to the ship it had been a second before. It crashed on jagged rocks, and fell apart as though it were a rotten apple. Nausea twisted Shelton's stomach.

One soul-torn shriek escaped Myra Benning's lips. "Those men!" she cried, looking down at the destroyed ship.

"No use hoping for them," muttered Shelton, with an infinite ache in his whole body.

His very soul shook at thought of bodies ground to quivering, bloody shreds, their lives snuffed out like snapping strings.

"Dead, every one of them," he said tonelessly.

"I think you're wrong!" said Hugh Benning. "Something is moving near the wreck—by that red rock. Thrown clear."

stumbling pilot back.

Inside again, Traft's suit was stripped off and he was laid on a bunk. For a minute he lay with closed eyes, breathing heavily. Finally he opened his eyes—and grinned.

"Here I am!" he whispered weakly. "Can't kill me off so easy!"

Shelton shook his head. "You're alive, though you shouldn't be. The pilot's cupola cracked into it first. You should have been ground to a powder."

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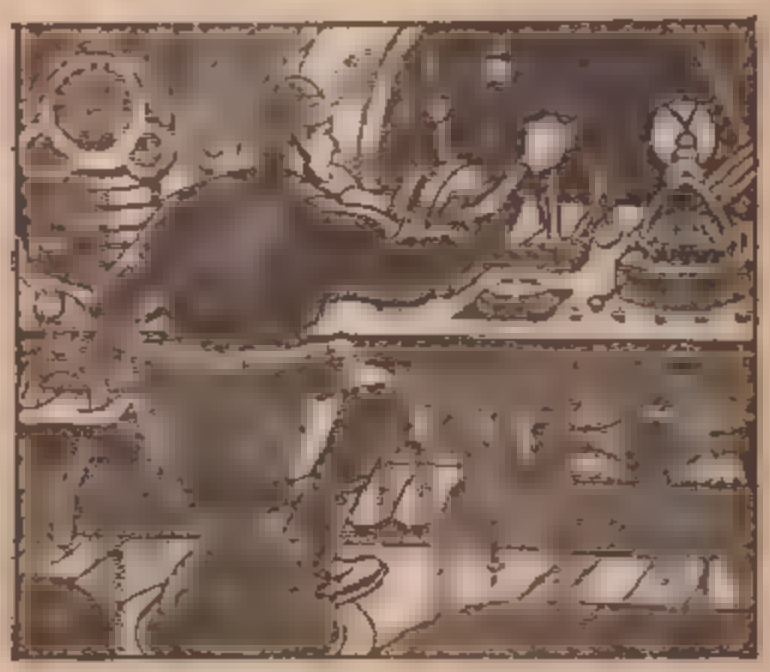

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Shelton let out a startled yelp. "It's Traft!"

It was. Unmistakably a giant figure in a vac-suit was crawling to its feet, a dozen yards from the shapeless mess of the wreckage. It rose staggeringly, helmet twisting as though to locate the *ETBI-14*, then reeled toward them.

Shelton was in his own vac-suit, and was out in less time than he had ever taken before. He sped across the intervening distances, helped the

Traft sat up, vitality once again flowing through his veins.

"Call it a miracle," he said simply. "All I know is the Universe cracked open and I fell through. The Grim Reaper just didn't call my number, though"—his eyes went bleak—"he reaped plenty!" His fists clenched. "Damn that Lorg!" he snarled. "If there ever was a fiend—"

"A scientific fiend!" put in Hugh Benning hopelessly. "With superscience at his command. We're

trapped now, completely!"

NONE of them could deny that. Shelton realized that the big, heavy *ETBI-14*, undermanned, could never leave if the Ranger ship couldn't. Their radio signals were blocked. Not a thing more could be done. It was simply a matter of riding away with the moving satellite, away from Saturn, away from the Sun, out to the—unknown.

It was a terrifying feeling, like sinking to the bottomless depths of a dark ocean. Already huge Saturn had dwindled to a tiny moon with a bright ring around it. The Sun's light grew steadily fainter. What breathless velocity was taking them from the empire of man, receding behind them?

"Let's check our velocity," suggested Shelton.

Traft, in the pilot's cupola, angled the Sun, Saturn, and a fixed star.

"Five thousand miles a second!" he said at last, incredulously. "Iapetus has been accelerating constantly all this time!"

Shelton tried to think of the Titanic powers necessary to accelerate this great bulk, millions of times larger and heavier than Earth's hughest freighter, but stopped in dismay. It was, as Benning had said, super-science.

The radio signal blinked in his eyes. "Lorg, I suppose," he muttered, snapping the stud.

The Alien Superior's reptilian features shone in the screen.

"Are you convinced, Dr. Rodney Shelton?" He spoke austerely. "I watched the crash of your other ship, with an optical instrument of mine that pierces matter. It was a futile attempt. The warp is impenetrable. I warned you. But you disbelieve—at the cost of ten lives!"

"Nine, damn you—only nine!" Shelton yelled back, taking a small, twisted pleasure in that denial. "One lived. But you'll pay for those other lives!"

"A few lives!" scoffed the alien. "What of the lives of my people that you and your men took? But I do not hold it against you. There is much more at stake than a few lives." His eyes glistened. "Planets, worlds, are the prizes I want!"

"You will not find it so easy," Shelton grimly retorted. "You will have to war against all our forces. You will never win!"

The Torm leader smiled cryptically. "Indomitable spirit!" he mused. "Murv is right in that." He raised his voice. "I am busy. I will contact you later. You understand fully now that you are my—guests?"

With a mocking glance, his image vanished from the screen.

Shelton writhed internally. Helpless captives in the hands of a ruthless intelligence! Yet it was not that so much. His personal welfare was unimportant. It was the thought of not being able to warn Earth.

He tried the radio again, full power, calling out a time-honored SOS for attention. But there was only a continuous Niagara of howling static, through which no wave could work. In desperation he tried every conceivable wave-band. Everywhere, the drowning static. . . .

No, wait! His pulses leaped. At Micro-wave Nine the hiss of a strong carrier-wave came through. Micro-wave Nine—the Space Scientist! He must be near, near enough to batter through—and perhaps trying to make contact!

HOPEFULLY, Shelton tuned the vernier and let out a triumphant cry as the Space Scientist's masked head ghosted into the screen.

"Space Scientist!" he cried eagerly. "Shelton calling—Dr. Rodney Shelton!"

Apparently startled, the Space Scientist seemed to be staring, speechless for the moment. Then he said:

"Dr. Shelton! You—"

"Listen to me!" Shelton hurriedly burst in. "I'm caught on Iapetus, can't leave or radio Earth. There are aliens here, somehow motivating Iapetus. They threaten war on the Empire—want planets! Can't explain more now. You're last hope. You must radio Rhea ships to follow. Hurry! Lorg might hear—send ships

after you!"

The globed head shook. "I do not take commands from you, Dr. Shelton!" he declared frigidly. "I am not concerned with the Empire's affairs!"

Shelton choked. Was the man still playing his childish part, in the face of this?

"But this is something vital!" he roared. "Something bigger than your paltry ideas of isolation and independence. The Empire is in danger! Can't you understand?" Suddenly remembering, Shelton's face grew livid. "You knew of this before! You warned me not to come to Iapetus! You knew of the aliens. But you would not tell me. You would not warn Earth! Unless"—he ground his words out vehemently, glaring with fierce accusation at the Space Scientist—"you have renounced all claim to your human birth, you'll inform the Rhea ships—redeem yourself to that extent, at least!"

"No!" The word came flatly.

"Man, you can't calmly stand by!" cried Shelton, aghast. "When the least little word from you—"

"Enough!" snapped the Space Scientist. "Emotions do not move me. Iapetus and the aliens are an interesting problem to me, and to my theory—no more. Their relation to the Empire of Earth is irrelevant!"

"But you were trying to contact me!" groaned Shelton. "Why? To taunt me? You—"

At that moment, on the screen, a second view superimposed itself over the Space Scientist. The latter's figure vanished instantly. Lorg's features, suspicious, stared out of Shelton's opti-screen.

"To whom were you talking?" the alien demanded.

"None of your business," retorted Shelton, snapping off.

Shelton turned away from the radio with sagging shoulders.

"That *was* our last hope!" he muttered bitterly. "And it had to hang on the mad ego of a monomaniac!"

"He's inhuman!" Myra whispered. "A man who thinks himself a god!"

"He's lower than the aliens!" snapped Traft. "I just wish I had him here for one minute. I'd change his mind about some things!"

Shelton shrugged. He looked out at receding Saturn, now scarcely displaying a disk.

"Too late now. Lorg and his Torms have succeeded in stealing a whole satellite from under the Empire's nose. All we can do now is wait and see what develops." He sighed, and went on in a monotone. "As far as we ourselves go, we're in no immediate difficulty. We have oxygen and food enough here in the *ETBI-Fourteen* for a month."

But he knew that before the month was up, stupendous things were to happen.

CHAPTER XV

Outward to Pluto

EIGHT hours later Saturn had taken its place in the starry backdrop of space as another of the pinpoint host. The Sun had dimmed and shrunk proportionately. Traft, hoarsely, had announced their velocity as twenty thousand miles a second!

Four humans riding a runaway satellite at a prodigious velocity that could barely be matched by Earth's fastest and lightest ships! Fantastic dream! An entire world, whose mass measured a staggering total of earthly tons, hurtling away from its age-old orbit, like a gigantic cannon-ball. The engine to drive it must produce forces comparable to the smoldering giant that at times on Earth had laid waste its crust. Colossal power was in play, whose designation in horsepower would require reams of paper to record.

Shelton had fallen into a sort of shock-proof calm. Facts had to be accepted. Now that the initial excitement had died down, he began pondering. Why had this been done? An entire satellite ripped from its orbit, flung toward the outer reaches? Their destination was Pluto, obviously.

What was to be done there? What were Lorg's cryptic plans?

Shelton tried to anticipate a little, but made no headway. So far it was inexplicable.

THE radio signal flashed. Shelton knew it would be Lorg, the Alien Superior. His hatefully confident features peered out of the screen, his large, unlidded eyes aglow.

"A complete success!" Lorg chortled in triumph. "The Great Machine which drives this satellite has come up to all our expectations. We worked on it many years. It would have been a sad blow if it had failed. But our engineers and scientists performed nobly. You have perhaps noticed, Dr. Shelton, that we have achieved the velocity of twenty thousand miles a second. I think you will agree with me that it is a marvelous feat—a product of super-science?"

Shelton remained stonily silent.

"But let me show you this Great Machine of which I am so proud," Lorg went on imperturbably. "I will relay views of it through to you. Just one moment."

Shelton almost snapped off the optiscreen, enraged at the Torm's smug boastfulness. But then he stayed his hand. It might be well to know as much of the aliens' doings as possible.

The Alien Superior's face was replaced in the screen by another picture. It was meaningless at first, a jumble. But suddenly its perspective leaped out, as finer tuning smoothed the general haziness.

Shelton gulped as the impression of great depth smote him. It was an aerial view of a Cyclopean chamber. The walls were studded with little boxes—no, *big* transparent boxes in each of which sat an alien. They were manipulating controls. Strange beams stabbed outward toward the thing in the center.

And the thing in the center was a truly amazing object—a gigantic coil of glasslike material, uprearing from floor to ceiling. It surrounded a thinner coil that in turn surrounded narrower coils, dozens of them. Finally the core was a thick laminated post that lost itself in the screen, evidently piercing the roof and continuing.

It was hard to estimate dimensions. Shelton conservatively placed the largest, outside coil as a thousand feet long and at least a hundred wide. Its glasslike, glistening cable was perhaps five feet thick. But there was no sign of a support. The thing upheld its own tremendous weight. Earth's best steel would never do that, as a coil.

A purling violet glow surrounded the coils, deepening toward the core. Electrical power, in one form or another. But Shelton was certain, look as he might, that there wasn't a pinhead of metal in the place! Plastics? That must be the only answer.

Lorg's voice came, as though he were a commentator lecturing tourists.

"The Great Machine!" he informed. "From its coils springs the world-moving force that motivates Iapetus. It is simple. Electricity is fed through the coil matrix and transformed thereby into space-warping energy. When space is warped, gravitational forces arise. I believe your scientist Einstein postulated that, a century ago."

The alien nodded slightly, as though giving unvoiced commendation to Einstein. He went on.

"We warp space in the direction *opposite* that in which we wish to go. A negative gravitational field results, repelling the gravity of Iapetus. Iapetus moves, since space is fixed. It is that warp beyond which your radio calls cannot penetrate, and that your Ranger ship so unfortunately crashed into. It is a solid wall of bent space!"

Shelton was thunderstruck, but to control himself he asked:

"How do you produce the great amount of electricity needed?"

The alien smiled. "We need but little electricity. We have taken advantage of a simple fact. The lower the temperature of a conductor, the less resistance to the flow of electricity. The electrons move more easily. As some of your Earth scientists know, a slight current in a coil of wire near absolute zero will continue for hours, even days, without diminishing.

"At the absolute zero itself, the current would continue forever! This chamber is enclosed, artificially cooled, and is as close to absolute zero as we can achieve. Perhaps it is a few millionths of a degree above. My workers there are in sealed suits. We have only to feed in tiny amounts of electricity, now and then, to make up for small losses. But the original current put in is still there, circuiting endlessly, producing the great world-moving forces for us like a faithful, undying slave!"

The Earth people stared at the great coils, trying to understand. A pulsating current rippled silently through, never dying, never wearing out!

"It's impossible!" Shelton found himself muttering. "Absolutely impossible!"

"Then we do the impossible—in your conception?" the alien said pointedly. "Notice the coils themselves. They are not metal; they are of plastic composition. It is also true that poor conductors become good conductors at low temperatures. We are masters of low temperature methods, Earthman, and of plastics.

"Our life, our environment, exists at much lower temperatures than yours. We know little of heat methods. Therefore we have never been able to utilize metals, furnaces, and all those processes that are the life of your civilization."

The picture of the Great Machine had flicked away, and Lorg's face once again greeted them.

"We do not use explosives, guns, since we have no metal industry," he went on. "Instead of rocket ships, we have gravity ships whose engines are miniatures of the Great Machine. We have developed plastics to serve all our needs. We have a greater number of varieties, serving all purposes, than you have alloys! Thus you see we are not handicapped. We handle greater powers, in fact, than you, as you have just seen. Our civilization and science will prove themselves superior—in the coming events!"

Shelton felt suddenly chilled. What would those coming events be? That question stabbed through his mind, crowding out the amazing superscience he had glimpsed.

"You are taking Iapetus to Pluto," he stated as a feeler. "For what purpose? Is Pluto your home world? Why—"

He stared quizzically at Lorg, waiting.

The Alien Superior smiled enigmatically. "You will find out all those things in due time," he said non-committally. "We will reach Pluto in thirty-six hours. I suggest" — he glanced mockingly from one to another of their haggard faces — "that you get some sleep. You cannot escape, and you are safe. Incidentally, here's a little bedtime entertainment for you, relayed from a ship just beyond the warp."

The loud speaker crackled for a moment, then blared forth with an excited Earth commentator's voice. The Earth people leaned forward tensely.

"—that utterly vanished a few hours ago. This eighth moon of Saturn has apparently slipped out of its orbit, incredible as it sounds, and lost itself. Earth astronomers are searching feverishly with their telescopes, but so far it has not been located. The Titan Ranger patrol has been out searching through and around Saturn without result. Iapetus is gone!

"No one knows how it happened. Astronomers say it is impossible for a moon to wander off. No official statement has been issued yet by the Government. Something startling will probably be the answer, but official channels have not revealed a thing. All official posts at Titan and Rhea are under a seal of silence. It is hoped that wayward Iapetus will soon be found somewhere around Saturn and thus end this unprecedented mystery. This is the central—"

The voice was clipped off. With his mocking leer Lorg said, "Au revoir" and his image faded.

"They're looking around Saturn!" said Shelton bitterly. "We're past the orbit of Uranus already. If only somebody knew before—"

"Before what?" queried Traft. "What do you figure the aliens are going to do when we've reached Plu-

to?"

Shelton shook his head. "Let's get some sleep," he said.

Lying in his bunk, a little later, he thought of Iapetus at Pluto, being loaded like a bomb with ships and aliens. A movable war base! It could rumble into the Solar System, disgorging its fighting forces anywhere needed. He could almost picture the scene, a moon looming in one of the planet's skies, ships plunging down to attack, earthly forces taken unawares.

Was this what Lorg planned? Shelton's sleep was troubled by the tailings of these ominous conjectures.

CHAPTER XVI

Impossible World

DAY had become permanent on their side of Iapetus, since the anti-gravity force was projected backward from their position on the satellite. It was a queer sky they saw, stationary, immovable, with the planets and Sun slowly fading.

The bright dot of Earth had drawn in so close to the Sun, as its orbit shrank, that it was obscured. They could not see Pluto, with the bulk of the satellite between, but they knew it must be getting bright, expanding into a disk.

The party aboard the grounded expedition ship had slept, or tried to, for a few hours. Since then they had waited in an air of portentous gloom, eating a little, as the hours passed. Finally they felt an increased throbbing under their feet, as the satellite quivered with decelerating forces. Their weight became noticeably greater as inertia pressed them groundward.

"We must be arriving at Pluto," Traft surmised. "Slowing down now. Well, they did it!"

Shelton nodded reluctantly. He was forced to admire the achievement, if not the achievers. A tremendous, world-sized bulk, driven by namelessly supreme energies across three billion miles of space! Never in the annals of Earth science had such a thing been dreamed possible. The aliens had touched a height, in this direction at least. It was something to be respected.

After awhile, the pressure vanished, and subtly they felt a new motion that Iapetus had taken.

"We're revolving around Pluto," predicted Hugh Benning.

"And rotating," added Traft, indicating the stars which had begun to wheel up from one horizon and down the opposite.

Shelton dashed for the radio.

"Maybe they've turned the warp off!"

But the roaring static greeted him as before. Lorg was not making any slips.

Presently, in their sky, a dark, shrouded bulk shouldered up between two peaks at the "east." It rose like a brooding monster, barely lighter than the black void behind it, lit by a starlike Sun four billion miles away.

"Pluto!" breathed Myra Benning, catching her breath. Not many humans had seen the outermost planet of the Solar System so close. She turned to Shelton. "They've made Iapetus a moon of Pluto, at present. Is that what the aliens' plans amounted to? Perhaps Lorg was just talking without meaning the rest!"

"I wish I could think so!" murmured Shelton.

He stared up at the dark planet, somewhat larger than Earth. It was too far to see, but was the Torm civilization up there, on that bitter surface? Were there dozens, perhaps hundreds of cities built of plastics, unwarned, unlighted save dimly, the natural homes of the cold-blooded reptilian aliens who had come to take Iapetus away? And, more important, were there fleets of warships there, with highly developed cold force projectors, ready to be transported toward the Sun to swarm into the Solar System?

Shelton waited to see, in a fever of anxious impatience.

Nothing seemed to happen. The skies continued to revolve overhead for several hours. Pluto swung around

majestically with the stars and finally sank again, as broodingly as it had arisen.

But not long after, the empty firmament slowed down and locked into place. They all tensed suddenly as the steady underground vibrations slowly increased.

SOON the throbbing became so violent that objects in the ship rattled against the metal walls. Even the teeth of the waiting four clicked, and their shoes beat a tattoo against the floor. Outside, the landscape seemed to dance. The stars became darting fireflies, whirling in small circles, as their vision stuttered.

"G-gr-eat J-jup-pi-ter!" exclaimed Traft. "Is Ia-pet-tus-s fl-y-ying ap-part?"

It almost seemed that way. Plainly some inconceivable force was being spawned within Iapetus, even greater than the energies that had driven it from Saturn. For one panic-stricken moment the thought came that perhaps the Great Machine had been strained beyond its limit, was now breaking down, to unleash its pent-up torrent of energy in one space-shattering explosion!

Each of the four, waiting breathlessly, felt as if sitting on top of a volcano.

But gradually the nerve-jangling vibration smoothed out into a steadier, though still powerful, rhythm. It felt now like the humming beat of a Gargantuan Diesel motor. The stars ceased their dizzying motion, yet the four Earth people sensed that the Great Machine below was laboring harder than it had before. Hope roused in Shelton that the machine had partially broken down, or was at least weakened. A machine constantly in need of repairs would hinder the aliens considerably.

They fell to waiting again, without knowing for what they were waiting. After an hour, Trafton stared fixedly at the stars, then jumped to his space sextant. He looked up, after taking tentative readings.

"That's queer," he observed. "We're going past Pluto's position, but in a straight line. We've left the orbit!"

They crowded at the "east" port, waiting for Pluto to appear. The wait grew to an hour—and the dark, brooding planet had not "risen," as it should if they were going past it. In what crazy direction were they going, and where was Pluto?

Suspense charged the air, with no one daring to speak.

At last Hugh Benning broke the taut silence with a long, sibilant breath. The lines of his face deepened perceptibly as he spoke.

"Pluto isn't there!" he said, almost inaudibly. "Pluto has been moved from its orbit!"

For a mad moment, Shelton almost felt like forcing Benning to take back those incredible words. It just couldn't be! It was one thing to move a comparatively tiny body like Iapetus—dumfounding as that had been awhile before—but moving Pluto, a definite planet a hundred times larger and more massive. . . . How could one accept such a palpable impossibility?

Shelton kept staring out of the port, telling himself that with their motion, Pluto must eventually appear, receding. He turned finally, in hopeless dismay. It fit in, of course, with the increased beat of the Great Machine. Somehow, the Titanic gravitational forces had been made to drag the big planet from its orbit!

ACCEPTING that, his stunned mind tackled the looming enigma of why and where?

"Mark," he commanded the pilot, "find out where—in what general direction—we're going."

Traft nodded and raced for the pilot's cupola. It would be a rather delicate measurement, with the basing planets so dim.

Shelton eyed the Sun gauge. Its measurement of the strength of sunlight was a rough scale by which to judge advance to or recession from the Sun. The needle was going down! Shelton refused to think what that meant until Traft came down again.

"We're receding directly from the Sun!" he reported with false calmness.

"The velocity is already about a thousand miles a second!"

Shelton met the shock of this revelation with a savage curse. Myra Benning put a hand to her throat and froze in that attitude. Hugh Benning bobbed his head, with a queer, twisted smile on his face. Traft kneaded one hand in the other, aimlessly.

That was *where*, stupefying as it was, but now *why?* Shelton finally ran to the radio, the others following as though afraid to be alone.

"Shelton calling Lorg!" he barked into the microphone, determined to swallow his pride and ask pointblank questions.

There was some delay, but finally the Alien Superior's visage rounded into the opti-screen.

"I am very busy at present," he snapped. "My attention is needed with the moving of Pluto. What do you want?"

"You're moving Pluto away from the Sun," Shelton snapped back. "Why? And exactly where?"

"I told you I wanted planets," retorted the alien. "I am bringing Pluto to my home world!"

Shelton's sharp gasp was explosive. Shock piled on shock!

"Your home world!" he echoed weakly. "Out there?" He waved a hand vaguely toward the regions beyond Pluto's former orbit. "Do you mean there's a tenth planet out this way? It has never been detected by Earth astronomers!"

"No, there is no tenth planet!" informed the alien, without elaborating. He seemed to be enjoying their surprise.

"Then where is your home world?" demanded Shelton. "The nearest star would take years to reach, even at your best speeds. Your home world can't be out there. It—it's impossible!"

"You like that word 'impossible.'" Lorg grinned, and shrugged. "Well, then, my world is the Impossible World, but it's out there! I'll contact you later—and explain."

Shelton snapped the radio stud with such force that his fingers were bruised.

"Am I going crazy?" he half moaned. He looked wildly at the others. "Tell me, where do we find worlds, planets? Around suns, of course! And where are the suns? The nearest is four light-years away. And he talks of an impossible world, his home world, out there! Planets don't fly around free in space; they're formed from suns, bound to suns. It—"

He broke off, realizing he had let go of his nerves. "Sorry!" he muttered. "Doesn't help any to blow up. I'll have to follow my own advice—to accept facts. We're moving away from the Sun, and to Lorg's alleged home world. That's that!"

BLANK-FACED, dazed, they gazed out toward the Sun, their Sun, dimming perceptibly back of them. The events of the past day had blunted their minds. A satellite yanked out of its eon-long orbit, motivated to Pluto like a great ship; Pluto tugged out of its orbit, and now being pushed out into the abyss of outer space! It was more than the mind of man had ever before been called upon to witness and accept.

They ate mechanically, then discovered they had been awake for many hours. Wearily, they slept.

When they awoke, they hardly dared look out of the ports. But an unwilling fascination drew them. The sight stabbed every nerve with icy needles. Around them was the true chasm of the empty void; chilling, abysmal. The Sun had been relegated to the rank of a true star, though an exceedingly bright one. Even at Pluto's orbit, sunlight was of the intensity of five hundred full moons on Earth. But here, the Sun's beams had become starlight, feebler than Jupiter's smallest moon!

There was a terrifying grandeur to the scene. Theirs were perhaps the first earthly eyes to look back at the Solar System from such a remote viewpoint.

Traft's camera clicked, recording the bizarre perspective on micro-film. Most of the planets were invisible; one with the Sun. Jupiter could be

distinguished, a slight distance out; and Saturn, Uranus and Neptune, like tiny pinpricks in the black fabric of space.

But where was Pluto? It should be visible too. Shelton started, remembering. Pluto wasn't there where it should be. It was being towed away, out into the sunless void. But where? To what impossible destination?

Finally the anxiously awaited call came from the Alien Superior, who alone could tell the answers to the plaguing question.

"You still think it is impossible for my home world to be out here somewhere?" Lorg inquired amusedly.

"Planets come with Suns," Shelton doggedly insisted. "The nearest star in this direction is Sirius, almost nine light-years away." Something clicked in his mind, something about Sirius. "A *dark* sun—that's the only possibility!" He finished with a sharp, quivering breath.

Lorg, preparing to throw this bombshell, looked almost angered that Shelton had guessed the answers.

"Yes." He nodded. "There are dark suns as well as bright ones. Suns that have burned out, or dimmed to a low red heat. Your astronomers do not know how many of such invisible dead suns exist between and among the burning stars. Such a dark sun would be undetectable by your earthly telescopes, unsuspected. That is my home world—a dark sun comparatively close to your bright Sun, with one planet!"

A dark sun, out in the great gulf between Sol and its surrounding stars! A more staggering conception could hardly be advanced. Yet in a way it was almost a simple answer.

"WHERE is this dark sun?" he jerked out. "How far?"

"About ten billion miles out from Pluto's orbit," stated Lorg. "Therefore, about fifteen billion miles from the Sun. It is, in fact, a companion star to the Sun—a dark companion. They form a binary, revolving about a common center of gravity. Many stars have dark companions. Even your scientists know that. Sirius, for instance. And it is likely that the Sirians, if the star has inhabitants, do not know of their companion dark sun, just as you Earthlings have not suspected."

"A binary—our Sun!" murmured Shelton, finding it a queer thought. "But their motion around a common center. . . . Shouldn't that be detectable to our astronomers in the positions of the stars?"

"Not unless parallax measurements were taken over the appropriate eighty-year period." Lorg seemed to sneer. "Your stargazers missed that. And they missed a still bigger clue—the extremely eccentric orbit of Pluto, which at one point crossed Neptune's. They kept looking for a mythical tenth planet. Why could they not conceive of a dead, but gigantic, sun exerting its gravitational influence scarcely much further? However, that clue is gone now—Pluto's orbit!"

There was satisfied maliciousness in the alien's tones.

Shelton saw it with breath-taking clarity now. The pieces of the mad jig-saw puzzle were falling together rationally.

"And you are taking Pluto to your sun," he said, "to be one of your planets?"

Lorg nodded. "Our sun has only the one natural planet. We Torms are a growing, ambitious race. We need worlds in which to expand. What better than to take them from our neighboring System, which has them to spare?"

The Earth people could only stare, hearing the diabolic world-stealing plan of the aliens laid bare. Lorg and his people were thieves out of the void, come to loot the Solar System of its planets! The realization was staggering.

Lorg raised a hand at the storm of outraged protest that was ready to burst from his listeners.

"Let me tell the whole story, briefly," he said.

He settled back in his seat, as though to enjoy the exposition of these mind-staggering things that would amaze his audience.

CHAPTER XVII

World of the Dark Sun

"BILLIONS of years ago," Lorg began with a grand flourish, "a double star, a binary, plunged at Sol, then a single star without planets. As your Lyttleton Theory states, in part, one of these suns grazed Sol, so that it ejected a mass of its burning material. The attraction of the other sun drew this out into a long tongue that finally split into fragments—molten balls becoming the planets.

"This second sun then careened on into space, as our cosmogenists have reconstructed that cosmic tryst. But its companion was torn from its binary attraction, because after the collision, the first sun's velocity had been reduced. This sun then became Sol's double, retreating to fifteen billion miles. In passing the molten planets, it clutched the last one for itself, becoming our lone planet, Torm. We call our sun 'Tor'."

Lorg paused and made a motion as though sweeping billions of years aside, then resumed.

"So much for that. In due time life appeared on Torm, when it had cooled; warm life such as yours, for Tor was then a hot sun. Intelligence evolved, in close to human form. Evolution is repetitious, because of the analogous mutation through the constant cosmic-rays.

"But then"—his voice softened a little—"Tor, an older sun than Sol, began to cool. A struggling civilization fought against increasing darkness and cold, losing. Intelligence was eclipsed on Torm, for ages. But Nature is resourceful. Mutation finally produced a cold-blooded species, inured to the dark life—our present species!"

The Alien Superior's eyes glowed.

"The latent spark of intellect burst into flame again. At about this time, in Sol's system, intelligence arose again, on Earth. The first uprise, on Mars, had passed into decadence. Thus our two civilizations, Torm and Earth, grew up almost side by side. Yours, much like our ancient warmage one, with metals and heat industries. Ours, today, a cold-age one, with plastics and low temperature methods.

"Your civilization had not suspected ours, for you could not see our dark sun. But we saw your blazing proximity from the first. When we had conquered gravity and sent space ships to explore the Solar System, we frankly envied your big family of planets, where we had only one! The thought germinated, grew, blossomed—"

Lorg's lips twisted significantly, then he continued on a different tack.

"We sent colonists to Pluto, Neptune and Uranus. But we could not go any closer to the Sun, with its terrific heat—not until we found the great natural hollows within Iapetus. We established a colony there. That was a century ago, at just the time you Earth people initiated interplanetary travel."

Lorg's voice rose on a more vital note. "At this time, I became the Superior of all our colonizing activities. Yes, I am more than a hundred years old. We are long-lived, as are all cold-blooded creatures. I foretold, seeing your Empire-building, that eventually there would be friction between our races, when you reached Uranus and outward. You would claim those planets, establish jurisdiction over our colonies, and we would be no better off than before."

LORG straightened importantly. "I laid plans before the rulers of Torm. Work was begun, installing the Great Machine within Iapetus. It took us a century—a hundred years of driving scientific research, hard labor, sacrifice and danger. I saw that at the end it would be a race against your earthly expansion, before you had too firm a grip on the planets we wanted. Particularly"—the alien looked hard at Shelton—"with the application of your admirable bio-conditioning process. We must get the planets away quickly, we decided!"

The Earth people were listening in

a taut silence. Was this all a mad, impossible dream? That all these tremendous, unsuspected events had been going on, building up to a crashing climax, for a century? Shelton shook his head, remembering the famous soliloquy: "There are more things in heaven—"

The alien, went on, dovetailing the more recent occurrences.

"I had hoped not to have our presence in your System discovered until the Great Machine had been completed. Some of your exploration ships, landing on the outer planets where our colonies existed, were—eliminated. We did not fear discovery on Iapetus, being underground. But quite by accident, recently, the survey ship of which you know landed next to one of our cave entrances. The men peered in. Startled, my guards there blunderingly used the cold force."

Lorg looked at Traft and Benning. "Later, when that giant man there shone his flashlight, looking for the small man, my guard fled, taking the man you call Benning along. Hearing of this, I knew there would be investigation. Work was rushed on the Great Machine. Only a few more days and it would be ready."

He looked at Shelton. "You came into the picture, Dr. Rodney Shelton. From what I know of earthly affairs, your ship, approaching Saturn, spelled investigation on Iapetus. I sent a ship to attack, to put you into suspended animation and bring you here as prisoners. But the Ranger ship intervened. Events seemed about to get out of hand, for me.

"I decided not to attack you on the surface of Iapetus with our ships, for fear you would radio for help immediately. Instead I planned a trap. You fell into it, were captured. Your later clever escape and message to Earth of our presence came perilously close to upsetting my plans, but not quite—by a margin of only hours!"

Lorg finished gloatingly. "The rest you know. Our hundred-year plan, for which we have labored with fanatic zeal, approaches its fulfilment. Torm will have sister planets, and our race will expand!"

Shelton had been standing rigidly, listening with every fiber of his being to the amazing recital. But it was no time now for squirrel-cage ruminations. One burning thought usurped his brain: "Find out all you can!" Every little item of information would be useful in the looming clash between Earth and Torm forces.

"How many planets," he asked deliberately, "do you plan to take as you've taken Pluto?"

And suddenly he remembered the arbitration episode, back at Saturn. Lorg had asked for five planets and all their moons, and threatened to take them by force, if balked. Now Shelton knew Lorg had meant that literally!

Lorg smiled arrogantly. "We will discuss that later," he said abruptly.

His alien, scale-covered features flicked from the screen.

ON and on into the dim void sped the powered satellite, pushing stolen Pluto, in the tongs of artificial gravity, before it.

Already oppressed by the knowledge of the alien menace, the Earth people were still more crushed in spirit by the dark, sunless caldron of outer space around them. The Solar System seemed lost. The Sun was now a distinctly yellow star, almost unthinkably remote.

But Shelton did not let mental lethargy destroy all initiative. He drove Traft and Benning to plotting the exact direction of their flight, in relation to the fixed stars. Long hours of tedious work gave result. Shelton smiled grimly. The direction of Tor, the alien sun, was known, in case earthly forces should wing out here.

Six Earth days passed, after the departure from what had been Pluto's orbit, as the ten-billion-mile gap was negotiated at the prodigious velocity of twenty thousand miles a second. Lorg's "guests" slept, ate, and inspected their oxygen units regularly, carrying on the details of life while their brains were torture chambers.

At last, far out in the hollow immensity of space, deceleration was

felt. It pressed them for hours, as the Great Machine groaningly dragged at their plunging speed. Sudden, quake-like vibrations arose and died, and their motion veered.

"Putting Pluto in an orbit around Tor," observed Traft.

They waited anxiously to see Tor, the sister sun of Sol. It rose slowly above their horizon, a giant, redly glowing globe, whose atomic fires had long since burned low for reasons that the cosmos only knew. Its surface temperature could not be much more than that of heated iron; perhaps a few hundred degrees centigrade. Its rays were too feeble to reach across the void and register in earthly telescopes. It would be a corpse sun, truly dark and dead, in another million-year tick of the cosmic clock.

Its ruddy radiance cast a ghastly glow over the landscape of Iapetus, paler than moonlight. The Earth people shuddered under that alien luminescence. A more unearthlike setting could not be imagined.

Caught in a spell, Traft almost forgot to snap pictures, but finally did with his camera lenses open to their full light-gathering power for the darksome scenes. He hoped the weird colors would come up.

A full Earth day was taken up in maneuvering Pluto into an orbit around Tor. The Great Machine's song of vibration changed pitch hourly as greater and lesser forces were brought into play. It was fantastic, this manipulation of heavenly orbs!

They could feel a sudden surge as Iapetus finally ungripped its planetary burden. Soon Pluto was seen receding, slowly rotating, following its given orbit. Tor was its primary now, and its dark surface was lit somberly by the dull torshine. A planet that had circled the Sun for ages on end had been transplanted to a new part of the universe!

It grated against Shelton's every instinct. The whole thing wasn't right; a violation of the design of space.

Then Iapetus picked up speed and raced inward toward the dark sun. A planet appeared, perhaps as large as Saturn, gloomy and shadow-haunted. Torm, the home world of the aliens who had come marauding to the Solar System!

IAPETUS lowered until it must loom in Torm's sky as a huge moon. It halted there, for some reason.

Shelton tuned the radio and finally an opti-screen view appeared of milling crowds of aliens within a city square. Thousands upon thousands were there, cheering and waving hysterically. Their combined voices thundered from the speaker. They were cheering Lorg, who had brought them the first of new worlds!

Shelton started suddenly, listening. The warp must be off, if radio waves came through! But even as he turned to remind the others, Lorg's face blotted out the other scene.

"We are hovering above Torm, my home world," he said. "For the present the warp is not in operation. But do not try foolhardy escape. You will note that several of my ships hover over you. If you try to leave, the warp will be immediately turned on. You would not like to crash, like the Ranger ship!"

The alien face, mocking, flicked from the opti-screen.

Shelton looked out of the port. Above hovered a half dozen black ships, silent sentinels. It would be madness to attempt a dash for freedom.

Ceremonies went on endlessly for a day. Black gravity ships, plastic-hulled, shot back and forth. A scene showed Lorg, high on a balcony, bathed in torshine, addressing the mad crowds.

Periodically they cheered. It was a scene that might have been recorded anywhere on Earth, with the return of a conquering hero. Lorg was the great man of the hour to the Torms, an explorer who, with no new lands to discover, had brought back a land, fetched it from the heavens!

"He's having his moment now!" growled Traft. "But just wait!"

Tense worry gripped Shelton.

What were Lorg's plans in regard to them? Were they to be incarcerated in Torm, in some Earth-conditioned prison? Shelton knew that Lorg wanted something with him, for he had hinted it, and in Shelton's mind was horrible suspicion.

Even as the Earth people helplessly waited down in the Torm city, Lorg faced Murv in a private chamber. Outside the ovations of the crowd over Lorg's speech, could still be heard.

The two aliens eyed one another, faintly hostile.

"You have made bold hints, Lorg, in your speech," said Murv. "Hints that you would not only bring back more planets, but defy the Earthmen entirely. I warn you against such a dangerous course, Lorg. You must arbitrate with Earth, lest we earn bitter enemies for all time. It may be too late already, though I think they will condone the taking of Pluto. But you must arbitrate with them now, or you will plunge our two worlds into a war of practical extermination, on one side or the other!"

"Yes, yes, of course I will arbitrate," assured Lorg, averting his eyes. "Am I not taking the Dr. Rodney Shelton back with me, for that purpose?"

Satisfied, Murv turned away. Lorg watched him with a twisted smile.

CHAPTER XVIII

Solar Menace

ALL the Torm celebrations over the great event done with, Iapetus leaped away, back the way it had come. The great red sun, Tor, began to fade behind, as the course was set for Sol.

The Earth people felt instant relief. Their hearts gladened at the mere thought of returning—home! The utterly alien world in which they had been stifled their senses, frayed their nerves. They watched as the dim bulk of Tor, dark sun of the aliens, dwindled into the midnight of space.

Only a short while later, Traft suddenly let out sharp cry.

"Look!" He pointed out of the port. "The Space Scientist's ship! What in thunder is he doing here."

Shelton saw the large torpedo-shaped ship with two white crosses on its sides. It scudded over above the warp, blocking out the stars, and darted for open space.

Shelton started for the radio, then stopped and groaned.

"What's the use?" he murmured. "He doesn't care about us, or the Empire! He's probably here only to observe, like a aloof god. Somehow he followed all the way from the System. But only to fit all this into his mad theory, whatever it is. It's ironic, that he alone should be able to warn the Empire—and won't!"

Time seemed to stand still in the star-powered void. Their hurtling velocity was in nowise apparent. They could not see the approaching Solar System, precluded by the satellite's backward motivation. But they knew they were nearing Sol, and hourly their spirits lightened—and at the same time grew tense.

What would the outcome of this cosmic drama be, the first act of which they had seen unfold?

Lorg contacted them when it seemed an eternity had winged past. Still flushed by the triumphant reception his people had given him, his tones rang.

"The culmination of a century's planning!" he fairly crowed. "You have seen, Earthlings. Is there anything to stop me? I will take planet after planet, as easily as this first! I will build a great empire, and my people will make me Grand Superior, ruler over all Torm!"

Shelton asked the question that was haunting him.

"How many planets do you plan to take?" In the back of his mind drummed that self-command: *"Find out all you can!"*

"At first it was planned," the Alien Superior said loftily, "to take only Pluto, Neptune and Uranus, and their moons, and those only after arbitra-

tion with Earth. Certain timid elements in our ruling body fear warfare with Earth. But I do not fear it!" His reptilian eyes blazed. "I will not arbitrate. I am going to take *all* the planets, one after another! Your Sun will be stripped bare. My sun, Tor, will beam down upon a great brood. Every planet, Earthman, do you hear?"

Shelton recognized the symptoms. Lorg had gone mad with power! It was a common failure with all intelligence, whether Torm or earthly. Perhaps in the unsolved death of Martian civilization, too, could be found the agent of power madness. Moving a world, with all the majestic command of an omnipotent being, Lorg had succumbed to further impossible ambitions.

Impossible? That word again. And so many times had it been the synonym for the real that Shelton felt an ominous dread.

"HOW will you do it?" queried Shelton, quietly. "Earth forces will find some way of stopping you! Even if the warp protects you from attack here on Iapetus, Earth will eventually trace you to Torm, and attack there!"

Shelton hoped it wasn't too obvious that he was asking leading questions, trying to ferret out the details of Lorg's plans. But Lorg, in flushed confidence, merely spoke scornfully.

"A great fleet rides with Iapetus, in fact most of our forces — thousands upon thousands of ships. They outnumber your Earth forces by ten to one. Our cold force, though not quite a match for your gunfire, will be effective in massed battles. Whenever Earth ships appear, my fleet will attack, decimate them. Thus we will gradually cut down the Earth forces. They will not find out about Torm till too late. I will go on, all the while, with my planet moving. Iapetus itself is immune from attack, because of the warp. Do you see, Earthling?"

Shelton saw all too clearly. An alien egomaniac whose plans had all the cunning of the power-mad, ruthlessly determined to annihilate a civilization. And there seemed no flaw in his plans!

"What about us—about me?" Shelton asked wearily.

"You were to be the means of arbitration with your Government," Lorg informed. "But that I have eliminated from my plans. However, I have a use for you, Dr. Shelton. You are an expert in bio-conditioning. You know the formula of adaptene. Later, you will show us how to make adaptene. That is one Earth secret we have not been able to uncover, since it has been guarded so well. With adaptene, we will be able to condition our race to the variations of climate that will result with far-flung planets. Then—"

"But I'll never give you the secret of *adaptene!*" Shelton broke in with harsh, stubborn defiance. "If you know Earth people as you claim, you know I'd die first!"

"You have forgotten we have a way of extracting secrets from men's minds, while they are in suspended animation," Lorg said calmly. "Our psychic extractor apparatus sends sensitive X-rays into the brain. They come out, modulated by the tiny electrical currents of thought, even the circling ones of the memory cells. By suitable interpretation of the modulated X-rays, we read the original thoughts. It is something like your voice-modulated radio waves being translated to sound.

"I could have used the psychic extractor with you already, Dr. Shelton, save that, as I mentioned before, the first intention was to be used in negotiations with Earth. However, with my change of plans, you will be submitted to the psychic extraction upon my next return to Torm!"

Shelton recalled Bennings' account of the chambers in which Earth bodies were kept, like living records, for the mind-reading process. He battled with sheer hopelessness that threatened to overwhelm him.

"As I was saying," resumed Lorg, "the adaptene will be used to condition some of your people to our conditions, when the conquest is over. When your armed forces are annihilated, and your worlds and cities exposed, our

cold force beams will sweep over Earthlings, put them in suspended animation. Later they will be adapted. And they will become slaves! Those that are not left to die!"

SHELTON felt a sticky wetness where his own nails had dug into his palms, drawing blood. Now the full depth of Lorg's terrible ambitions was revealed. He had the true, depraved nature of the conqueror, a desire to destroy and enslave.

"I will have no compunctions," Lorg continued implacably. "You are, after all, an alien race to us. Two diverse species of intelligence can only have hatred for one another. One must dominate the other. We will dominate yours!"

On this ominous note, the Alien Superior clicked off.

And it was this ominous note, like a tormenting dirge, that whipped through their brains all during the trip back to the Solar System.

"We must get away!" Shelton said a hundred times. "Get away somehow, to organize Earth's forces, with what we know against Lorg's horrible campaign."

But how? They could not get past the warp, with either their radio waves or ship. They had already ascertained, by experiment, that the warp was on at all times, whether the satellite was in motion or not. Evidently it was a fixed and permanent feature of the Great Machine's operation. Only at Torm had it been turned off for a while.

They were trapped as securely as though in unbreakable chains. Shelton felt himself turning old and gray, revolving scheme after scheme in his mind, none of which promised a ray of hope.

When the familiar feeling of deceleration came, they knew they must be near the Solar System. Probably they were passing vanished Pluto's old orbit, and approaching Neptune.

Neptune had two large moons, one so dark that it had been unknown and unseen before 1950. This outermost moon, of course, would be the next annexed and spirited away to Torm. And then the Solar System would be humming with another mystery—the third disappearance of a planetary orb.

And no one would know, or guess, how and where. The black alien ships would take care that no Earth ships followed them out into the void. Only four people knew—four who were trapped on Iapetus. No, five knew—the Space Scientist, too!

Shelton ground his teeth. If only the Space Scientist had spoken one word—But useless to think of that now.

"We must get away!" he repeated through clenched teeth, pacing up and down in the cabin like a caged tiger.

They could feel the beginnings of maneuvers to attach Neptune's second moon to the gravity hook. Gigantic, cloudy Neptune itself reared into their sky as Iapetus jockeyed into position. The Great Machine beneath their feet sent its teeth-jarring pulsations through the ship.

Shelton, still pacing, took no notice, a frown of concentration on his face.

"Must get away!" his brain was chanting. "Must get away!" He stopped, glaring at Traft.

"Good Lord, man!" he snapped. "Is that all you can think of doing at a time like this?"

Traft was clumsily fumbling through his collection of small prints with his big paws.

"I'm trying to think, Rod," he mumbled. "All these shots taken underground—might be a clue." He went on in spite of Shelton's snort. "I'm going through them one by one. It's a sort of review of what we know. Here's a shot of the cave. Those stalagmites and stalactites shine here"—he used his magnifying glass—"like ice. They—"

RODNEY SHELTON stopped in midstride. "Ice!" he exclaimed thoughtfully. "I noticed that, too, when our flashlights shone on them. They've existed there probably for ages, in the uniform cold, with drop by drop adding onto them from water squeezed out of salt crystals in the roof." His eyes narrowed. "Suppose,"

he added tensely, "that a great heat played on them. What would happen?"

"They'd melt." Traft looked up quickly. "With enough heat, steam would be formed!"

"Live steam!" Shelton said tightly. "Blown back into the corridor, down to the alien city underground—what would that do?"

Hugh Benning raised dull eyes in which a light had dawned.

"It would disorganize the aliens, all that heat. Like a terrific heat wave would in any earthly city. Steam to them would be like molten metal to us!"

Shelton spoke tensely. "If we can just force them to shut the Great Machine off for a few minutes—a few seconds—the warp wouldn't be there to stop us. We could escape!"

Traft hastily ruffled through his prints and picked one out.

"A shot of the Great Machine," he said. "I took it from the opti-screen while Lorg was showing us views of it. Look, Rod, there's the cooling apparatus."

Shelton grabbed the print and examined it carefully with the lens.

"A pump affair, run by power from the city. Mark, this picture is priceless! If we blew steam down there, it would upset their cooling apparatus that keeps the Great Machine at absolute zero. It can only run at that temperature. They would *have* to shut it off!"

"But how produce the heat, the steam?" puzzled Traft. "It would take a great amount of heat to do the job. And you can't even light a match in Iapetus' air!"

"If we had one good heat-gun—"

Shelton glanced about the cabin, knowing in advance there was no such instrument aboard.

"There was one in the Ranger ship," murmured Benning. He looked out of the port at the crumpled wreckage and shook his head. "No use looking for it. Smashed to bits."

"Think! Think!" charged Shelton, as hopeless looks were exchanged. "The steam would do it, I'm sure. We must figure out a way of producing it!"

Myra Benning spoke up. "We have plenty of battery power, in a ship like this. Can that be utilized?"

Shelton mulled that over for a moment, dubiously. "No," he finally judged. "We'd have to have big resistance coils. We haven't the apparatus—or the time! We need large volumes of heat rapidly."

TRAFT suddenly snapped his fingers. "Rocket fuel!" he cried. "Like any other explosive, it can be burned too, in the open, with oxygen—"

"Wait!" Shelton's voice cracked eagerly. "If we could get the ship backed up, with its rear tubes sticking into the cave-mouth—heat and blowing pressure at once! Mark, can you do it?"

Traft had already leaped to the side port, looking the situation over.

"Ticklish!" he admitted wryly. "And I'd need someone in the engine room to keep the fuel lines open."

Hugh Benning came to his feet. "Used to be a fuel man in the spaceways, ten years ago. I'll keep the engine at peak for you. Myra can watch the dials for me."

"We'll have to try it!" Shelton decided. "It'll have to be done as quickly as possible. They have ships around here some place. They'll investigate, try to stop us, of course."

"Strap in!" warned Traft, as Hugh Benning and Myra turned for the engine room. "This is going to be a rough ride!"

CHAPTER XIX

Through the Warp

HIS big paws expert and quick, Traft started the engine. He let it idle hummingly for five minutes, in the meantime staring over the intervening terrain to the cave mouth, planning with narrowed eyes. Then he turned back.

"If I don't rip the hull off on some sharp boulder," he said grimly, "we'll

make it."

Shelton realized the hazards. No ship had ever before been called upon to traverse such rutted ground. There was no chance to raise the ship and gently plop it near the cave mouth, in that short distance. It was simply a matter of wheeling over the jagged ground, trusting to luck.

The rear rockets burst out in a deafening roar at the big pilot's touch. The ship trembled, inched forward, then catapulted ahead. Rocking crazily, the heavy craft bounced over the twisted surface of Iapetus. Muscles strained, Traft kept himself hunched forward within reach of the controls, and touched off the proper blasts.

Like a fiery monster, the *ETBI-14* swung in a big arc for the cave mouth, tail end swinging as it neared. Timed neatly, the rear tubes were in line with the cave, only ten yards short. But at the last second, the ship tipped crazily, almost bowling over.

"Side wheel shot!" panted Traft.

A ravening burst of the retarding rockets shoved the ship backward, grinding on its wheelless side. But the rear tubes were almost projecting into the cave.

"Good enough!" shouted Shelton. "Give her half blast, so the ship doesn't move, from the rear—and keep giving it!"

A hollow rumble at the rear told of long, searing tongues of flame belching into the cave, filling its confined space with terrific heat that would melt the ice, turn the water to hissing steam. The blasting of the rockets would then cram this steam down the corridor.

Shelton's imagination vividly painted the picture. Billowing clouds of live steam rolling into the alien city, the Torms thrown into a panic. The steam rolling on, filling every corner of their cavern spaces. Large volumes of heat released, far more heat than the cooling system for the Great Machine could cope with.

He switched on the radio. The roaring crackle of the interfering warp sounded. If that stopped, they were free to dash away from Iapetus.

It seemed they sat there for ages, with the rumbling thunder of the rear rockets filling their ears. Was it futile, after all? Did the aliens have some way of closing off the Great Machine's compartment?

Suddenly Shelton clutched Traft's arm. Black ships had arisen over the horizon, part of Lorg's great fleet maneuvering within the warp. Silently, ominously, they winged close, hovering with their anti-gravity forces. Almost instantly the biting, numbing force of cold-beams gripped them, prying into every nerve with congealing fingers.

Myra's cry and her brother's hoarse yell came from below. Shelton began fully to realize how potent such a force could be, in battle, paralyzing gunners, pilots, crews!

"Another couple—seconds!" panted Traft, "and we're done—for."

DESPERATELY, cursing through lips he could barely move, the big pilot jammed his knuckles at the controls. The rocket blasts crescendoed as Traft sought to cram more heat and steam into the cave.

The next instant the bedlam of noise changed queerly. Shelton stiffly moved his head nearer the radio speaker. Only a slight, steady hiss came from it!

"The warp's gone!" he cried, clumsily trying to shake Traft's shoulder with a hand he could not feel. "Up—the ship—"

His throat seemed filled with liquid air. He slumped back, with dancing spots before his eyes.

Traft responded like a berserk madman. He hunched his powerful shoulders, in defiance of the cold force that had almost paralyzed them to rigidity. Growling, he threw his hands at the rocket studs. They were like amputated stumps. Muscles cracked with strain.

Somehow, through sheer determination, he hammered his wrists down, moved studs. The rocket blast grew to the thunder of take-off power. Bouncing crazily on its wheelless side, the big ship jerked forward.

Traft nudged over other studs, with his elbows. The underjets belched

and thrust the ship up into the air. The upward surge was almost enough to snap their necks.

But there was a moment of respite, as the cold beams momentarily lost their range. Traft shoved the acceleration lever over to its last notch. Like a flaming comet, the *ETBI-14* hurtled up into the sky of Iapetus, beyond the area that had once been the warp barrier.

They were free!

Shelton, his senses swimming back, realized that, but he also saw that a horde of alien ships were at their tail, rapidly overhauling. Lorg was not going to let his prey escape. The black ships zoomed close, and again the numbing force came into play. Already weakened by it, Shelton knew they could not hold out long.

Traft's eyes were smoldering thoughtfully.

"Got to get away!" he mumbled "One possibility—richer fuel mixture. Will give six gravities of acceleration. We'll go unconscious—or worse! Engine might blow up. But aliens couldn't match that acceleration. Automatic shut-off after five minutes. Want to chance it, Rod?"

Shelton nodded. "Last chance! Go ahead!"

Traft poked at his controls, setting a robot shut-off five minutes ahead. Then he grasped the fuel mixture wheel with the heels of his two palms and groaningly slammed it over from "normal" to "rich." With a terrific surge, the ship leaped forward.

Crushing weight, six times normal, came into being for the humans aboard the *ETBI-14*. Each carried a burden whose equivalent would be a half ton on Earth. Their senses reeled into oblivion. But before he passed out, Shelton saw the alien ships dwindle, as though they were going the other way.

Traft clung to consciousness for a moment longer. There was a triumphant grin on his face, but behind it stark anxiety. Death, whom no acceleration could leave behind, might steal up on one or all of them. Overburdened hearts stopping—engine exploding—hull cracking open—anything might happen during those five minutes while super-forces shoved the ship through space. Then the big pilot plunged into a river of darkness. . . .

SHELTON came to with an infinite ache in every bone. He moaned with sharp pain as he moved his head. But the mountain that had been lying on his chest was gone now. The ship was silent and unpowered. He looked around, meeting Traft's eyes.

"That did it!" The big pilot's voice was weak, but jubilant. "No sign of the alien ships!"

Shelton nodded in voiceless relief, looking for himself. The stars shone clearly, with no black hulks blotting them out. Iapetus was visible as a large disk. Already it was maneuvering to grip Neptune's second moon again, after the temporary halt of the Great Machine's activity. The Earth people had succeeded in stopping its operation only for the minutes needed for escape. But for that, Shelton was supremely thankful.

Traft groaned suddenly and darted out of his seat.

"My camera!" The super-acceleration had torn it from its clamp and hurled it into the corner. He picked it up and his face cleared. "Not a scratch!" he said, with almost more relief than he had had for their escape. "Let's go down—see how the others are."

Shelton unstrapped himself and managed to stagger down to the engine room, with muscles that threatened to turn to water. Thankfully, he saw that the two down there, though numbed by the experience, were unharmed, though grimy from the engine's fumes while it had been blasting so furiously.

Hugh Benning looked up dazedly. "We got away?" he asked hopefully.

At Shelton's nod, Myra gave a cry of joy.

"Thank heaven!" she whispered. "Away from the aliens—from Lorg!"

A little later, when they had all recuperated somewhat, Shelton spoke to his companions, his eyes lighting grimly.

"Now that we're away, we can inform the Empire. The Great Machine on Iapetus must be destroyed! Without it Lorg's whole diabolic plan falls flat. Time is important. It would take too long to go to Saturn, at least a week. We'll radio them. Something must be planned quickly.

"Lorg will have Neptune's moon transported and be back for the other moon in no more than two weeks. It took a century to conceive and build the Great Machine, but only days for its accomplishments! If Earth waits too long, half the planets will be gone!"

"Direct attack on Iapetus won't work," Hugh Benning said heavily. "Lorg wants the Earth forces to attack, against his superior numbers on Iapetus, and be gradually cut down. He's probably ready to lose ten ships to one."

"He wouldn't lose that many," Traft gloomily observed. "With gravity control, they can outmaneuver our ships in space. And that damned cold force is bound to play hell with pilots and gunners." He shook his head. "Then on top of it all, the warp protecting Lorg and his underground headquarters so thoroughly!"

Solemnly they looked at one another, baffled by a problem that seemed insoluble.

Shelton's mind battered against the stalemate. What could be done before Lorg stripped the planets away from the Sun, like peeling a ripe fruit? A queer expression spun in his brain, though it had little meaning at the moment: "The best defense is a good offense." But suddenly it crystallized into a plan, a daring, breathtaking plan that made the blood race through his veins.

"WHY is it that Lorg made such a desperate try to stop us, if he's invulnerable?" he demanded, and answered himself exultantly: "Because we know where Torm, his home world, lies!"

"You mean attack Torm?" cried Benning. "Most Earth ships don't carry enough fuel to get to Pluto and back, much less Torm."

"But they can carry more, fill every available inch of cabin space!" snapped Shelton. "And bombs—"

"But what good would that do?" objected Traft. "The Great Machine would still be left. I don't see—"

"Listen to me!" Shelton went on rapidly. "Lorg has most of the alien forces, in ships, there on Iapetus. In a way, that's a tactical blunder. If Torm is attacked, he must send help. The warp must be lifted, for ships to leave on that mission. While the warp is lifted, a fleet of our ships, secretly hovering, dart down and land. Then it's just a matter of storming the underground city!"

"Sounds like it might work!" cried Traft.

"It will work," Shelton said confidently, "if it is timed right."

"Providing," croaked Hugh Benning, "Lorg doesn't catch on and leave half his fleet at Torm, now that we've escaped."

"That's up to chance," admitted Shelton. "And to one more thing I'm banking on—Lorg's own certainty that he is a mastermind and we are inferior thinkers!" He pushed the pilot toward the cupola. "I'm going to write out what I want to say and you'll code it, so Lorg's ears won't intercept it. Then, while I'm radioing, you scoot the ship in several directions alternately, in case Lorg's ships are waiting to trace our position by our signals."

Shelton began writing furiously, composing the most startling message that had ever been winged over the humming ether lines of the Empire. Fleetingly, he thought of the stupefied surprise with which his fellowmen would hear of Iapetus, the motorized satellite, the incredible theft of Pluto, and of the Impossible World of aliens, far out in the void.

CHAPTER XX

At Bay with the Aliens

FOUR hours later, when the portentous message had found its

way to Earth, the Earth Union Council gathered for the most momentous conclave in its history, or in all the history of mankind.

Shocked beyond words by what they heard, there was a period of excited, dazed comment. It all seemed inconceivable, fantastic — impossible. Particularly the thought of a dark sun, companion to Sol, out in the void, unsuspected by astronomers. That was the Impossible World!

But they had the evidence of the vanishment of three heavenly bodies, which could not be denied. And Director Beatty, one of the councillors, fiercely declaimed that his young protege, Dr. Rodney Shelton, had one of the soundest minds he had ever known, and that every word he spoke must be true.

Bewildered, the council took up Shelton's plans, and as an official gesture, passed them in the record time of half an hour. For they knew that in this stupendous crisis everything depended upon the soundness of the reasoning of a keen-minded young scientist; far out in space.

The council moved with unprecedented swiftness. Orders hummed over wires, and the vast, intricate organization of interplanetary affairs burst into feverish activity. Two fleets had to be prepared. But a strict censorship, specified by Shelton himself, kept the news from broadcast channels, so that Lorg's radio would not hear of it.

One fleet, as planned by Shelton, was composed of any and all commercial ships available, hastily loaded with bombs and reserve fuel. Little more than enough room for skeleton crews was left in the cabins. Private ship companies were conscripted to donate ships to the project. Space crews were picked of the best and most highly trained veterans of the spaceways.

Within three days this fleet soared away from Earth. Though only the leaders knew, it was bound for Tor, on a grave mission. And on the longest trip ever undertaken by man.

The second fleet was Earth's regularly armed Space Navy, and this was carefully outfitted, stocked and primed for its part in the coming struggle. With it went a hundred of the special ETBI ships, used to transport bio-conditioned colonists. Within these were a thousand men bio-conditioned for a cold, thin-aired world like Iapetus. Director Beatty had heeded Shelton's first message, three weeks before.

Finally this fleet too winged into space, secretly, bound for Neptune. The climax would come in ten days' time.

A week later the Space Navy fleet cautiously maneuvered near Neptune, and got in touch with Shelton on low-powered, coded radio signals. Further details of their plan were gone over item by item. The success of the coup depended upon timed, bursting action. Scout ships, drilled with instructions, were sent to a position beyond Pluto's former orbit, to watch for the return of Iapetus and the aliens.

The bombing fleet arrowing for Torm followed a curving course plotted by Shelton, planned to avoid passing close to Lorg on his return trip. They arrived within the margin of time allotted and stopped to hover beyond sight of Torm. They sent back a brief, long-range signal of their readiness, then waited with cabins darkened, rockets still. The men within were somewhat dazed by the tremendous journey they had undertaken, but were grimly ready for action.

RECEIVING their signal, Shelton breathed a sigh of relief. A miracle had been accomplished already. It was as if the English Armada had sailed to the unknown shores of America, immediately after its discovery by Columbus.

Finally the electrifying signal came from the scout ships that Iapetus was rumbling up to the Solar System. Shelton gave the word, and a coded, long-range signal was sent to the Earth fleet far out near Tor. These ships thundered up to the lone planet of the aliens, swooping low and dropping bombs in their cities.

The best defense is a good offense! Shelton's plan, carried out on two fronts ten billion miles apart, was smashing to its climax.

In the *ETBI*-14, the four Earth-people awaited developments in an agony of tenseness. Their cabin lights were out. Beyond their ports, they could barely make out the first of the Space Navy fleets, occulting the stars. The Sun was not visible to betray them while they awaited the arrival of the planet stealers. They were in the huge, conical shadow of Neptune that speared far out into space.

Telescopic observers aboard the Navy ships finally reported Iapetus approaching, aiming directly for Neptune's great, single moon that was left. Lorg's world-sized tug slowed and maneuvered into position. The two bodies drew closer, Iapetus dwarfed beside the moon. But it had powers that could whisk the larger body from its orbit, as easily as plucking away a marble. These powers came into play, invisibly.

The Earth observers could see the great moon's orbital speed decrease. Shelton turned his radio to low power.

"Now's the time!" he said in a bare whisper. "It will take them several hours to reduce the moon's orbital velocity. We'll creep up on the other side of Neptune's moon and be within striking distance, when the time comes!"

"Aye, sir!" came back from the Navy commander, and the other ships were informed in the same careful way.

Gently, on the lowest of rocket blasts, Shelton's ship and the fleet followed Neptune's shadow until they were behind the moon, from Iapetus, then headed for its surface. Reaching this vantage, they crept slowly, cautiously around the Neptunian moon's bulk. It was a game of stalking and the enemy must not receive premature warning.

Finally they hovered, high enough above the moon's surface so that gentle underjets counteracted gravity. A slight glow over the horizon told them they were just short of seeing Iapetus—and being seen.

"So far, so good!" Shelton murmured to Traft. "The call should come to Lorg at any moment now that his world is being attacked. It takes radio waves just ten hours to come from Torm. Our fleet there attacked just ten hours ago."

Their own radio, kept open, got the call from the bombing fleet suddenly that the attack on Torm had begun.

"Now he must know!" Shelton said tensely. Into the microphone he whispered: "Fleet, attention! Move slowly in view of Iapetus. At the moment their black ships rise, to go to Torm, the warp will be gone. Blast down then, at top maneuvering speed!"

THE fleet moved slowly ahead, till half of Iapetus hung as a huge moonlike object over their horizon. Then they stopped, awaiting the crucial moment.

"It should be soon now!" Shelton said hoarsely.

"It had better be!" grunted Traft. "Lorg has already dragged Neptune's moon out of its orbit, given it a velocity of a hundred miles a second toward Tor!"

Fifteen minutes passed. A half hour.

Still no sign of alien ships rising! Through telescopes they could be seen as huge black blots resting on the white surface of Iapetus.

When would they rise? Shelton began to wonder if his great plan had failed. Was Lorg so heartless, so intent on his goal, that he would not send the help his people must now be clamoring for? Or had he somehow been warned of the Earth coup? Or had he thought of possible attack at Torm and left half the fleet there on the last trip?

Shelton realized that the success of his coup lay in the lap of Destiny. Which way had the wheel of Fortune turned—for or against Earth? Rodney Shelton's mind was crucified by doubts and agonized torment, more so than during any of the tumultuous events preceding. He did not know that his fingers were squeezing Traft's

shoulder until the big pilot winced.

Shelton started. His eyes strained forward. A ship moving across his vision, ahead! Ready to put his lips to the microphone, for the advance signal, he suddenly drew back with a violent curse.

The ship had not risen from Iapetus. It had drifted from Neptune's shadow. And on its sides were two big white crosses—the ship of the Space Scientist!

He was on hand again, watching this episode of the mighty struggle between two great civilizations. A mind divorced from all former attachments, living its own mad, independent existence, unconcerned over the turn of events. No doubt, were the Earth forces decimated, the whole empire of man exposed to alien conquest, he would laugh coldly and put the zero symbol representing humanity in his formula of the cosmos!

Enraged at his own analysis, Shelton shook with the temptation to order the Space Scientist's ship fired upon, destroyed. He had refused to warn the Empire, weeks back, when it would have meant much. He was a traitor to humanity, wasn't he?

But Shelton conquered his blind anger. Such an act would instantly warn Lorg, disrupt the whole coup, precarious as it was already.

Fuming inwardly, Shelton saw the Space Scientist's ship glide back into the shadow of Neptune, waiting for what would happen.

Shelton himself concentrated again on a sharp watch toward Iapetus. In the name of heaven, would the black ships never rise? How much longer could he stand the nerve-shattering wait?

And then—it happened!

Shelton's whole body jerked violently. Black ships rooming up from Iapetus, a long line of them, fully half of the total alien forces. They were streaming off toward outer space, to save their home world from the savage bombing of the Earth fleet, or extract revenge, at least. Lorg had tumbled into the trap! The warp was lifted! Iapetus was a free-floating body now, vulnerable to attack.

Twisting his rheostat to full power Shelton shouted into the microphone: "Down at Iapetus! Full acceleration! Land near cave mouth! Blast away!"

THE entire fleet leaped forward, like greyhounds unleashed. The *ETBI-14*, under Traft's skilled, sure touch, led the van. Down they sped toward Iapetus, at reckless accelerations, courting disaster on landing. But Shelton had stressed the necessity of speed, before Lorg should know of the attack and once again threw around Iapetus his impregnable warp.

With action started, a deadly calm settled over Shelton. Half the distance covered—three-quarters. Would they make it? Was Lorg even now reaching his hands to whatever controls threw on the warp? Would all these thousands of magnificent ships smash into a terrible, invisible barrier, to rebound as shattered, broken debris, spattered with human blood?

Shelton felt the weight of his responsibility in this daring, desperate attack. Yet in the back of his mind was the voice of assured hope.

And a minute later, his hopes were fulfilled. Retarding blasts thundering and splitting the thin air of Iapetus, the Navy ships plunged for the jagged surface, wheeling for a landing. The fleet had come as a wide-spread pancake, all arriving at almost the same time. It was the precision, trained skill, practiced formation flying of Earth's finest pilots. Shelton's heart leaped with admiration.

But then he cried aloud. Some few ships, lagging, burst into flying fragments against an unseen barrier and slithered off into space. The warp had been turned on again! But too late. By far the majority of the Earth fleet was nestling down for landing, well within the barrier. Those deaths of a few brave men would not be in vain!

"Look out!" came Traft's warning roar. "Bad landing!"

Shelton suddenly remembered their damaged undercarriage, gripped for his seat handles with sweaty fingers. So precipitous had their descent been that the underjets could not cushion

the fall, though Traft blasted them valiantly.

The *ETBI-14* landed with a jarring thump, rocking crazily as it rolled forward a few yards with hull scraping. Shelton's body straps broke and he was flung against the wall. The big pilot, face lit with concern, quickly unstrapped himself and picked Shelton up like a baby.

"Hurt, Rod?" he cried anxiously. "Sorry I couldn't—"

"Let me down!" snapped Shelton. "I'm all right." But when he tried to stand, his left leg buckled under him. "Guess I've got a sprained ankle! And of all times—"

He broke off and hopped to the radio.

"Fleet, attention!" he barked. "Man your guns! Their ships will attack soon. Give 'em hell! We've got to hold them off while the underground city is stormed. Conditioned men, attention! Come to the *ETBI-Fourteen* immediately!"

CHAPTER XXI

Act of the Space Scientist

WITH all moves discussed to the last detail long before, the Earth forces swiftly organized themselves. The armed ships lay like silvery dots in all directions, bristling guns pointed upward, waiting for the enemy ships to appear.

Some of the ships lay half smashed from bad landings on treacherous Iapetus, but in these, the men were already in vac-suits. Here and there, unavoidably, two ships had smashed into one another, in the close landing maneuvers. Undoubtedly there were some deaths, ruined ships and guns, but on the whole, the casualties of that roaring, precipitous descent were slight.

From the special ships came the men who had been bio-conditioned to the Iapetus air and cold. They loped rapidly across the rocky terrain, congregating around the *ETBI-14*.

They were to invade the underground city, on an equal footing with the aliens, unencumbered by vac-suits. They would be a mobile force, swift to attack, much more effective in a long-drawn-out, hand-to-hand battle than unconditioned men in vac-suits. Shelton thanked the forevision that had prompted him to ask for the corps, as a hunch, weeks before when contacting Earth to first reveal the alien menace.

They were armed with rifles, bandoliers of ammunition. Certain groups dragged with them wheeled machine-guns, flame-throwers, and ponderous heat-beam guns. Earth had been unsparing in arming them with its best and most effective weapons.

Shelton tried to struggle into his vac-suit, but had to give up. He would not be able to walk on his badly sprained ankle.

"Guess I can't make it," he groaned. "Mark, you and Hugh Benning lead the men. Smash at the aliens with all you've got—force quick surrender!"

"And get Lorg!" Traft added grimly, fastening his visor.

"Keep in constant touch with me by radio," Shelton admonished. "The bio-men have several along. You can hook one on your belt." His face lighted somberly. "We've got to win!" he declared earnestly. "We should now. The battle was half won when we got past the warp. Go to it!"

Traft and Benning stepped out of the lock, in their vac-suits. They conversed briefly with the bio-men, then set the lead toward the cave mouth, a quarter-mile off.

Alone in the ship with Myra, Shelton and the girl looked out from the pilot port at the familiar, though unworldly, landscape of Iapetus, dotted now with the waiting Earth forces. A hushed lull seemed to hang over the universe, as though it were watching this soon-to-be bid for mastery between two warring intelligences.

Shelton's face clouded a little, watching Traft's army march to attack.

"Why did I have to get a sprained ankle?" he muttered. "Now I have to wait up here, like a lame duck. It's ironic, isn't it, Miss Benning?"

"Yes, Dr. Shelton."

They looked at each other strangely, finding it a little ridiculous that after all they had been through together, they were still so formal. In the swift tumble of events, they had carried through, without change, a reserved attitude to one another. Shelton smiled a little, and opened his lips to speak, but at that moment the radio blared forth.

"Traft calling! Cold beams pouring from the cave! Here's where they get a taste of hot lead. The battle's on, Rod!"

THE first line of bio-men had fallen to the ground, writhing in the grip of concentrated cold forces. The second line promptly began pouring rifle-fire into the cave mouth. In a moment, the chatter of machine-guns and the hiss of the flame-throwers joined the battle sounds.

Then, over the horizon, came the black ships of the enemy, in seemingly countless numbers. Like buzzards, they swooped over the Earth ships, pouring down their numbing cold force.

The Navy guns began popping viciously, in a steadily increasing roar. The larger dreadnaughts hurled their thunderous big shells into the melee. Black ships faltered, peppered with jagged holes, and fell to the surface to split open like eggshells. Their plastic hulls, though diamond-hard, could not withstand the battering of Earth's most powerful guns.

But they kept coming in endless numbers, spraying down their cold force with enough effect to prohibit accurate gunfire. Here and there an Earth ship's gunfire ceased entirely, as its crew was thrown completely into suspended animation. If the aliens ever won, with their strange weapon, all the Earthmen would be prisoners, in a state of suspended animation. And later slaves!

But Shelton was sure the enemy could not win. It might have been different in space, where the gravity-ships could outmaneuver the rocket-propelled ships. But on solid ground, with the Earth forces like a grim, impregnable fortress, all the advantage was with Earth. The alien ships were raining down; broken, useless. It should be just a question of time before they would no longer be superior in numbers, and completely ineffective.

At the cave mouth, Traft had routed the large force of aliens there. Already he was leaping into the cave, leading his men on. In the light gravity, the men easily lifted bulky machine-guns and heat-projectors. The bio-army disappeared from sight, invading the underground world.

A half-hour later, Traft's voice came cheerily, via radio.

"Overlooking the city now!" he reported. "Aliens swarming up the slope, armed with long sharp things. Benning says plastic swords and spears, as good as steel. There'll be hand-to-hand fighting now. They have us outnumbered plenty, but we're reducing the proportion with bullets, flame and heat. Sort of a"—he sounded as if he were a little nauseated—"slaughter. But they have courage, coming through it all like demons. Hand-to-hand fighting started now—"

"You and Benning keep out of it!" warned Shelton. "One slit in your vac-suits and you're out of the picture. Just stay back and give orders. That's your part!"

"Right, Rod!" Traft answered, reluctantly. Half under his breath he added, "Anyway, I'll get some nice snaps."

And so the battle raged on, above and below ground, with the Earth forces rapidly gaining the upper hand. After an hour, above ground, Shelton could see that the black ships were not coming in such tremendous numbers any more. They began to fall away from the massed stand of Earth ships, and retreated to the fringes, where the Navy gunners continued to pick them off one by one.

"It's practically all over!" Shelton breathed joyfully. "Lorg should be surrendering any minute now—"

"Look!"

MYRA was pointing upward. A ship had dropped directly over

them, hovering. And then Shelton saw the two large white crosses on its sides. The Space Scientist's ship!

None of the Navy gunners had fired, for they had seen it was not an enemy ship. It lowered and landed, just beyond the *ETBI-14*.

"Wonder what he wants here?" Shelton growled. "A front seat at the big show? I'm going to give him a piece of my mind!"

He turned to Micro-wave Nine and barked into the microphone: "Attention, Space Scientist!"

The Space Scientist's masked head appeared on Shelton's opti-screen, but said nothing, though his air of coldness could be fairly felt.

"Look here!" Shelton exploded. "You're a traitor to your own race, a renegade! You knew of the aliens, but you wouldn't lift a finger to help the world you were born on. Had you given the warning, much of this would not have happened—the disappearance of Iapetus and Pluto, men dying in battle!" Shelton choked with rage. "You're going to pay for it! You thought you could come here, observe things as though it were all a gigantic play for your benefit, and then leave. But you're not leaving! If you try to go, I'll command the Navy gunners to fire. You're going to be taken to Earth —and court-martialed!"

The Space Scientist appeared to show only studied indifference to the threat.

"Court-martialed, as a traitor!" yelled Shelton. "Do you hear me?"

"Yes, I heard you," came back the Space Scientist's voice, with a half mocking note.

He raised his hands to fumble at his mask. As he removed it, Shelton was thunderstruck at the face revealed.

It was the scaled visage of an alien!

The alien's large, dark eyes peered at Shelton with faint amusement.

"I am Murv," he announced. "A citizen of Torm, and an official just beneath Lorg in authority!"

"But the Space Scientist?" gasped Shelton. "Where is he? You have his ship!"

"I am the Space Scientist!" the alien stated calmly. "Or rather, I am the embodiment of the *myth* of the Space Scientist! You see, with the spreading of your race among the planets, it became imperative for us to learn as much about earthly things as possible. We learned your language from captured men. Then, twenty years ago, I was commissioned by Lorg to drift close to Earth, to pick up any and all information as to your plans and exploits. Knowing that I would eventually be sighted, my presence questioned, I devised the Space Scientist story. Your authorities finally came to accept me as a harmless, if eccentric, human who chose to live in space."

So for twenty years an alien, masquerading as a human, had been spying on earthly activities! No wonder Lorg had known so much.

THE alien, Murv, went on.

"I took the precaution of having false rocket tubes added to my gravity ship. And when I knew human eyes were watching, a chemical giving off bright but cold phosphorescence was ejected, exactly as though I had a rocket engine. The two white crosses I adopted as my insignia, mainly because you humans regard that symbol with peculiar reverence. My mask, and the hinted story of a laboratory accident, is self-explanatory."

These revelations dovetailed, but still in Shelton's mind, there were inconsistencies.

"You warned me not to go to Iapetus," Shelton mused. "I understand that now. It was to avoid exposure of your underground city. But why did you keep up that pretense, when I contacted you? I was a prisoner, and for all you knew at the time, a permanent one."

"I expected you later to act in the arbitration between Lorg and your authorities," Murv informed. "My duties then would have been to hover near Earth and watch for any secret moves on Earth's part. As the Space Scientist, I could do so with impunity. But branded as an alien by you, I would be hunted down, driven away."

Then an amazing thought struck Shelton.

"But up there at Neptune's moon, before the attack!" he cried. "You saw us Earth forces waiting to attack Lorg! Why didn't you inform Lorg?"

Shelton drew a sharp breath. Why, the whole coup could have been disrupted, all their careful plans whiffed to eternity!

"You had plenty of chance to warn Lorg," he repeated, dumfounded, "and yet you didn't!"

The swift thought was in Shelton's mind: Could the alien be a renegade as he, Shelton, had accused him?

The Torm smiled strangely, sadly perhaps. "I did not want to warn Lorg! He is defeated. Better so!" He bowed his head for a moment.

Murv looked up, suppressing whatever feelings were his.

"Lorg went mad with power," he explained. "He wanted to destroy and enslave all Earth people, take all the planets. His own idea, entirely. My people have good and bad elements, exactly as yours. We all wanted planets, and endorsed the building of the Great Machine for that purpose, but our reasonable element hoped to gain planets purely by arbitration, not by force. Lorg betrayed us!"

Momentarily, fierce anger illumined the speaker's face before he went on:

"I kept waiting for Lorg to arbitrate, through you. But when, after the taking of Pluto, he made no such move, I knew he was planning bloody, complete conquests. I knew, too, that he would never succeed. Having observed earthly doings for twenty years I know of your spirit, courage, your indomitable will. Lorg might succeed in taking half the planets, but eventually the tide would turn. And then, I knew, there would be a bitter war of extermination, till either my race or yours was obliterated from the face of the Universe!"

Murv's eyes held horror. "You see now, Earthman? Why I did not warn Lorg? I had been thinking for days of what to do to avoid the inevitable holocaust that Lorg's course would bring about. I saw that with the success of your coup, a solution would be reached, quickly. For I believe that now, with the elimination of Lorg, our races can come to an understanding."

SHELTON realized, during the moments Murv had been speaking, that the entire complexion of things had changed. It was Lorg who was the arch-enemy of mankind, its would-be conquerer; not his people. Tact and consideration must now be used in dealing with the Torms.

"Will you expect more planets, by arbitration?" he asked.

Murv shook his head. "No," he said softly. "We have forfeited our chance, through Lorg's blundering tactics. We are now a defeated race, with no right to make demands. I only ask that the two bodies we have already taken to Tor—Pluto and Neptune's second moon—be left to us!"

"I can promise you they will be," Shelton said promptly. "Our sole aim at the moment is to destroy the Great Machine, so there will be no more world moving. And I think the basis for a permanent peace between our races will be your promise never to build another Great Machine!"

"You will be given that promise, gladly!" the alien said earnestly. "We—"

A new voice burst in on the all-wave circuit. Traft's voice; from below. Shelton had almost forgotten that a battle was still raging there.

"We've got them licked, Rod!" came the big pilot's bellow. We swept through the city, drove them back. One Earthman is worth ten Torms! They've thrown down their arms in surrender. We've surrounded the chamber in which Lorg has barricaded himself. We're battering down the door! There it goes—and there's Lorg!"

Shelton snapped on his auxiliary opti-screen, barked into the phone.

"Shelton calling Lorg!"

CHAPTER XXII

The Moon Bargain

LORG'S autocratic features, twisted with bitterness, appeared on the

second screen.

"You must surrender, Lorg!" barked Shelton. "Your ships above ground have been driven off. My men down below—"

"They had best not step nearer!" threatened the Alien Superior. "I have my hand on the master switch of the Great Machine. If I close it, all its energy will be released at once, tearing Iapetus apart with its terrific stored forces!"

His face gleamed evilly. Madness shone from his eyes. True madness now, from the crashing of his power.

"You have won, Earthman!" he said sardonically. "But I hold your life in my hands. In revenge—"

"Don't!" Murv cut in sharply. "Don't destroy Iapetus and all on it. Then Earth will never know the true facts, and the war will go on!"

Lorg's left hand reached to the side, to tune an auxiliary screen.

"You, Murv!" he ground out. "I suppose this is all to your liking? With me out of the way, you would arbitrate. But I tell you, races alien to one another cannot live in peace! One must dominate the other. If I had succeeded, we would have ruled the Earthlings. Now, since all is lost, I'll at least take with me, into death, the Earthman who brought my downfall!"

Shelton thought rapidly, in this frightful moment of impending death for all.

"I think you had better not, Lorg!" he said quickly. "You may have forgotten that you started to move Neptune's moon before the attack came. You had given it a velocity of about a hundred miles a second — toward Tor! That velocity is not lost, as you know from the laws of motion in space. It will take time, at that slow rate, but if you destroy Iapetus, the free-plunging moon will eventually reach Tor, crash into it, drawn by its gravitation. The impact will send out a wave of scorching heat and blinding light to Torm, your planet. If you destroy Iapetus now, you destroy all your people!"

Lorg's mad eyes glared in momentary indecision. His insane mind seemed trying to determine whether that was so. Mad or not, he could not let his own people be destroyed, to let the Earth-people reign supreme, in their binary Universe.

Cold sweat beaded Shelton's forehead. He felt the wings of death brushing closer than at any time in all this strange adventure. Myra's face was ash-white, her eyes wide as though staring into eternity. Even Murv's alien face reflected the stark horror of the moment. All the satellite seemed to be held in an electrified stasis.

Lorg's right hand, on the Great Machine's master control, grew limp for an instant. And in that instant, there came a sharp *zing*, and the nauseating sound of the impact of a bullet in living flesh. A hole appeared in Lorg's right temple as if by magic. Pale blood gushed forth. His limp fingers tightened for a moment on the switch handle, then relaxed and fell free. With an expression of stark bewilderment, Lorg, the alien conqueror, slumped to the floor—lifeless.

"Whew!" came Traft's voice in a long-drawn-out sigh. "If I had missed—"

For a moment Shelton leaned back, panting.

"Good work, Mark old boy!" he murmured finally.

HE snapped himself alert. Matters had to be attended to.

"Mark," he ordered, "find all Earthmen down there who are in suspended animation. Benning can point out the chambers. Bring them up, to be taken to Earth and revived. When you come up, leave a few of the bio-men on guard."

"Okay, Rod! And while I'm going around, I'll be taking a complete series of pictures of this place. I'll get some kind of a prize for them, on Earth."

Shelton looked at the image of Murv. The alien had stood unmoving since the death of Lorg. His face expressionless, there was no clue to the thoughts going through his mind. But faintly, Shelton could sense bitterness, perhaps at the crashing of plans he and his people had nourished for a century.

"Can you direct the handling of the

Great Machine, Murv?" Shelton asked.

The alien nodded.

"Then you will have the moon of Neptune put back in its orbit," Shelton said. "After that the Great Machine will be destroyed!"

He would not feel a moment's peace until that had been done, and the threat of its terrible powers removed forever.

But the alien remained silent for a moment. Then he said, slowly, his tone half apologetic:

"There would be no need to put the moon back into its orbit!"

"But you surely don't want your world destroyed!" Shelton snapped, impatiently.

The alien shook his head. "No, that would not happen. Tor swings in an orbit itself, with Sol. When the moon of Neptune arrived, it would swing to one side of Tor. Tor's great attraction would then grasp it, pull it into an eccentric orbit. Neptune's moon would be captured, as a body of Tor's system!"

"You mean," Shelton queried wonderingly, "that you would want to have the moon as another world in your system?" This was all incongruous, fantastic, this bargaining for worlds! "I'm afraid it can't be, Murv. I have no authority to present you with another planetary body—" He stopped, wondering how to say it. "You already have Pluto and Neptune's first moon, at Tor. No sense in taking them back. But to let this second moon of Neptune go—"

"I am asking for this moon!" the alien said softly, firmly. "For my people. We will remove our colonies on Neptune and Uranus, leave your System free. Iapetus will be destroyed, in the void between our Systems, and our promise will be given never to build another Great Machine. Let this moon be a token of peace between us."

Shelton's thoughts were in a turmoil. Was this some trick on Murv's part?

Was he scheming to carry on the aliens' program, now that Lorg was gone? Shelton felt ashamed of himself instantly. No, obviously Murv was sincere.

"IT is such a small thing to ask, Earthman!" Murv went on, his voice vibrant. "This moon is but one of your many bodies. Ours is an impoverished System, yours rich with worlds. What difference can it make it this little moon is gone from your Sun, when you have giant Jupiter and Saturn and their moons, and all the other great planets? And we have so little! To us, this one moon would be a great new world! Can you understand, Earthman? How long we have lived on one, lone planet, gazing across with our telescopes to your magnificent System? Can you blame us for building the Great Machine, hoping to bargain for some of your worlds? Results have been unfortunate, but that is over. I am asking, pleading, for this one more moon! Surely you can spare it!"

Shelton could glimpse the alien's depth of emotion. With all the eloquence at his command, he was begging for another small world for his restricted System. And incredible as it might seem, Shelton knew that he sympathized with him!

"Murv, the moon is yours!" Shelton said quietly. "I may be utterly crazy for taking this responsibility, but I am." He grinned briefly at the thought of facing the council, on Earth, and blandly telling them he had given away a moon!

For a moment the two stared into one another's eyes. Alien and Earthman. A spark of something akin to brotherhood passed between them. There would be peace between Earth and Torm, in the coming ages. . . .

A day later, after Iapetus had been motivated, under Murv's guidance, to a point far beyond Pluto's former orbit, all the ships within and upon it left. The black ones of the aliens streamed out into the dark void, toward Tor. The fleet of Earth soared with thrumming rockets toward Sol.

Within the pilot cupola of the *ETBI-14*, Traft and Hugh Benning had their heads together, plotting the return course, after the take-off.

"Let's go down to the cabin, Myra," Shelton suggested to the girl beside him.

Traft turned to watch. Shelton, limping, had his arm around the girl's shoulder for support. But they were also holding hands. Traft snatched up his camera and clicked the shutter.

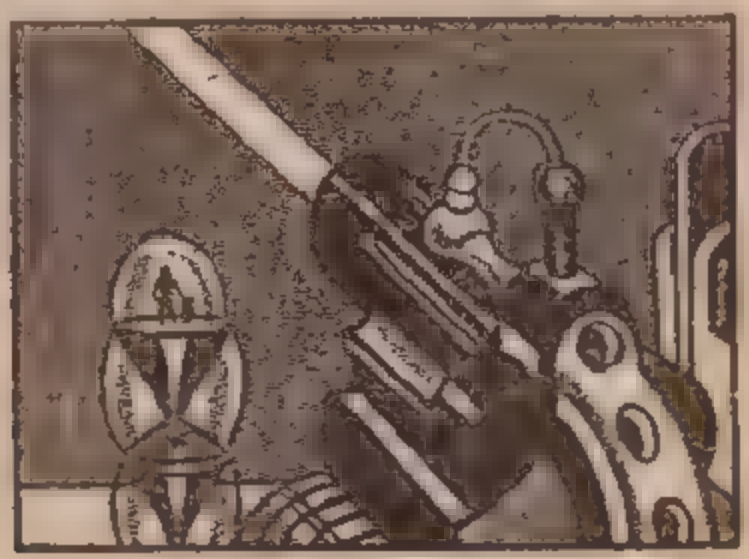
"I've been waiting for that shot!" he grunted in satisfaction.

Hours later, as Murv had set the timed mechanism to throw the master control of the Great Machine, deserted, stranded Iapetus exploded into cosmic debris, ripped to atomic shreds by the release of world-moving gravitational force stressed within. The Great Machine, and Lorg—and his dream—were no more.

Shelton stared back at the bright ring of shimmering dust that expanded and faded into the dark void. It was hard to believe that their great adventure had been real. That a world, an Impossible World of aliens, existed close in the void. That a planet and two moons had been whisked from Sol to Tor. That he had been instrumental in ending an unsuspected menace, one that had been hanging over them for a century.

And last, that he had given away a moon as a symbol of peace between their races.

Shelton felt content.



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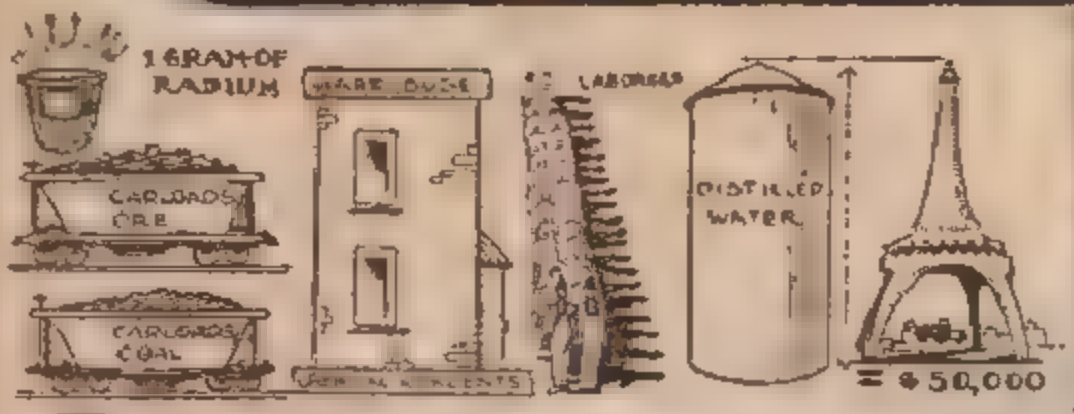
THEY CHANGED THE WORLD

THE LIFE STORY OF MADAME CURIE who discovered RADIUM

BY JACK BINDER



TO EXTRACT A GRAM OF RADIUM, THERE ARE REQUIRED FORTY CARLOADS OF ORE AND COAL, A TANK OF DISTILLED WATER AS TALL AS THE EIFFEL TOWER, A WAREHOUSE OF CHEMICALS, AND THE NECESSARY LABOR. THE WORLD'S PRESENT TOTAL SUPPLY OF RADIUM IS JUST FIVE OUNCES!

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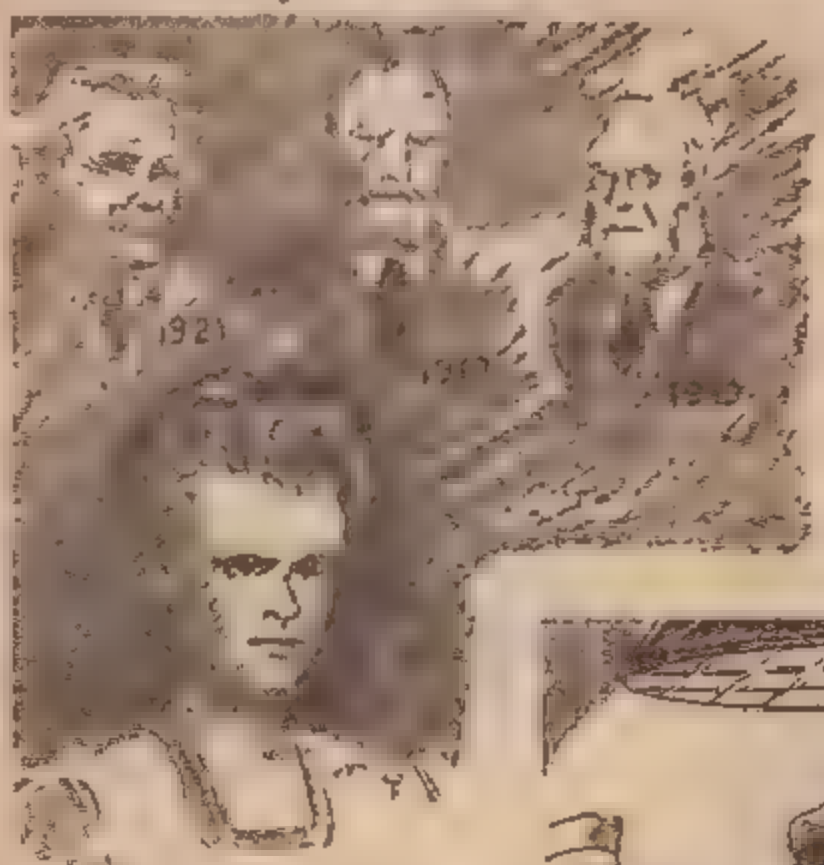
MADAME CURIE DID NOT REALIZE AT FIRST THAT SHE WAS WORKING WITH SCIENCE'S MOST POWERFUL AND DANGEROUS ELEMENT. HER HEALTH WAS NEVER SOUND BECAUSE OF RADIUM EMANATIONS SHE HAD ABSORBED. A GRAM OF RADIUM, FULLY DISINTEGRATED, WOULD YIELD MORE HEAT THAN A TON OF COAL, WEIGHING A MILLION TIMES MORE!



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SOME stories are forgotten almost as soon as printed. Others stand the test of time.

Because "The Man from Mars," by P. Schuyler Miller, has stood this test, we are nominating it for SCIENTIFICTION'S HALL OF FAME.

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The Man From Mars

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By P. SCHUYLER MILLER

Author of "Dust of Destruction," "The Red Plague," etc.

SURELY a circus is no place to look seriously for a Martian—particularly Professor Von Tempski's little one-elephant show. And yet, there it was—blazoned in huge crimson letters, "THE MAN FROM MARS (fifty cents)." Having a normal curiosity, I lingered.

Above the door of the Martian's elaborate tent hung a painting of Mars. Over its entire face ran a fine tracery of lines—Schiaparelli's "canali," Lowell's "canals"—more than I had seen on any published sketch.

"Absolutely the most stoopenjus spectakle known to mankind!" cried the barker. "Unequaled by the wizzudry of modern science! Ladies and gennlemun — a living, breathing, speaking man from the planet Mars! The exiled prince of another race—lost in the endless sea of empty space—drawn by mysterious forces to our own little world, and persuaded to entertain the intelligent citizens of Kansas with examples of the wonders of another world! Only fifty cents!"

Behind the barker's stand was a great canvas drop, inscribed with a series of names "renowned to the world of science," endorsing the scientific worth of the man from Mars. Most of them were literally peppered with degrees, at least fifty per cent unknown to Earthly education. They may have been from Martian universities.

But down in the lower corner was a name that brought me to with a rude jolt—Harvey Henderson, B.S. I slammed down my four bits, grabbed the ticket, and shouldered through the gaping crowd of farmers into the tent. I, too, wanted to see the man from another planet.

Slowly the tent filled. The crowd faced the curtained stage. Then the lights waned and died. The whispering of the audience sank, ceased. Now a faint music was playing behind the curtain, soft and full of overtones. Softly the curtain parted and drew aside.

HALL of FAME

A great gilded chair stood on a raised dais in the center of the stage. Beside it stood a table with cathode tubes, Tesla globes, and the like. On the throne itself, hunched down in its gilded depths, was the man from Mars.

A sense of keen disappointment filled me at the sight of him. This Martian was pathetically human with

One of the circling blue spheres flew out and burst in Dugan's face, blinding him

his thin body with huge chest, swathed in dull red robes, spindling legs and arms with bony, protruding joints; large delicate hands and small feet. But the large and magnificent head seized everyone's attention. It was half again as large as our own, a smooth, bald, pink dome with great ears rising above a bulging brow and tiny, wrinkled face. A little full mouth was pursed under a slightly hooked nose. Above, sunk deep beneath massive, hairless brows, were his eyes!

Those eyes! In those great orbs was all the beauty of another world—living, vibrant, ageless beauty, with a sort of grave wisdom and penetration that seemed to gaze through and beyond you. In that moment I knew that this was more than a cheap side-show.

The Martian's long, tapered fingers danced over a keyboard fixed to the chair-arm. From one wing a low, rubber-tired cart rolled out, bearing an instrument that I recognized as a variant of the common theremin. Soft music was drifting from its speaker. A second cart appeared, bearing a large plate-glass tank of water with goldfish swimming about in it.

The Martian's hands began playing a witch's dance on the ivory keys, leaping faster than the eye could follow. The instruments beside the throne rose as on wings into thin air, swept forward, grouped above the forestage. A pause, and then a group of three high voltage discharge tubes began to blaze with color, leaping, pulsing color, far beyond any Earthly art.

The thin-stalked bulb of a cathode ray surged to the fore, hung for an instant, then began its weird glow as its hurtling rays ionized the air. A little half-sphere of some dark mineral darted up before the window of the tube, into the path of the rays.

Instantly it blazed with blue flame, scintillant with dancing sparks of orange-red. Then the ray died, and the discharge tubes, yet the cold blue flame burned on alone, swinging in slow, small circles above our heads, until a scurry of keys bore it from sight.

And now came the real marvel of the entire program. A second tank appeared, with fish, like the first. The Tesla globes swam out, ten-inch spheres of brass, poised perhaps ten feet apart, and silent lightning began to play between them, a lacework of pale electric flame that danced without the customary crackle of a high-tension spark. The water of the twin tanks began to rise, draw away from the sides, mount into a rounded cone that slowly elongated until it tore loose from the glass with a little sigh, leaving the fish in perhaps six inches of water at the bottom of the tank.

Freed, the liquid cones bulked into two spheres of water, floating overhead, swinging slowly about each other to the rhythm of the flame-song. Suddenly they merged in a single great globe of water, a dozen feet in diameter, drifting unsupported above our upturned faces.

This sphere, defiant of gravity, became opaque. Milky vague shapes and outlines appeared on its spinning surface, forming a globe of the Earth that hung before us. Earth, seen from outside, from open space!

It faded as it had come, forming a new world in its stead—rose-red, with capping of white and a tracery of fine green lines over its entire face, running from red of desert waste to cool green of vegetation, from southern ice to northern snows. I recognized the planet Mars.

It was a spectacular exhibition. Then the globe shone clear, divided, and descended as water back to the tanks. The curtain fell, the lights came up, and we filed in hushed wonder toward the door.

As I turned, outside, to leave, a hand fell on my shoulder, the husky voice of the barker was in my ear.

"Hey, he wants to see you, inside—the guy that runs it. Go back that way."

WONDERING, I went back to a flap in the rear of the tent, pushed through. I was back-stage, the throne and all the rest of the paraphernalia before me, the form of the Martian slumped wearily in the scant comfort of its gilded seat. A familiar

figure was bending over him. He swung around to greet me, and I recognized Harvey Henderson.

"Well, you old dingbat, how'd you like the show?" he chuckled.

"Man, it's big!" I gasped. "What *is* it?"

"It's the real McCoy," he said tersely. "But I wish I'd never seen it—or him. It can't last, Hank, and I'm afraid the breakup will come pretty soon."

"You mean this is not just a show?" I asked.

"This is really a man from Mars!" said Henderson.

"Where did—he—come from—how did he get here, of all places?" I faltered.

"I'll explain. Right now, come and meet him. He saw you watching the show. I guess he senses a kindred spirit."

Henderson turned and looked deep into the great eyes that had been staring at us. The form on the throne stiffened, rose to its feet, moved jerkily toward me. The eyes caught mine, held them, seemed to swim into my very being and search my inner self. The Martian's hand was rough and dry, lifeless, like a mummy's. His face was of the same coarse texture, unlike any flesh that I had ever seen, but I knew somehow this was no fake. The Martian sensed my thoughts, for something like a twinkle appeared in his eyes.

"I have a shock for you, Hank," Henderson said. "Watch."

He fumbled at the nape of the Martian's neck, pressed sharply. There was a click, and the Martian's body collapsed into a crumpled heap of red cloth and wire-framed pseudo-flesh.

Only his head remained, suspended in midair, with a three-foot cylinder of faintly violet opaque crystal dangling beneath it. Another click, and the great cranium split, just behind the ears. Henderson laid the halves carefully aside and stood back. The Martian—the real "man from Mars"—floated before me.

A squat three-foot cylinder of violet crystal, two feet in diameter, rose unbroken to a transparent hemisphere of quartz glass which housed the real head of the Martian. It was startlingly human. Only the fine, great eyes were the same.

Above and about the Martian's head, inside the crystal globe, was suspended a network of very fine silver filaments, with cables like spiderweb running down into the hidden interior of the purple cylinder.

"He can't make sounds in our audible range," Henderson told me, "but he has a power, telepathy of some sort, by which to express himself. It is a crude method, at best, with us, but I am getting able to identify a few of the more abstract mental impressions. I've had plenty of practice in the last five months."

"Five months?" I wondered.

Henderson replied with a smile. "Six months ago the Martian landed on Earth in his space ship. He was out on an exploring trip when he ran across a farmer who promptly locked him up in the silo as a menace to the natural world of Genesis.

"That's where I found him—in Leland's silo, already sold to this circus as a freak. Leland showed me the Martian. He sort of attached himself to me—felt that he stood a better chance of establishing communication, I guess—and it wasn't long before he did get his first message across.

"I was examining him in the barn door when all at once my automatic pencil hopped out of my pocket and began to scurry over a piece of new pine flooring. It drew a picture—a map of North America—then hovered over it, sort of questioning me. I caught the idea and put a cross on the place where we were.

"That was just the start. Pretty soon I caught the telepathy idea. It takes two to make it work—and it wasn't long before I had the story roughly pieced out. Lakjzt was voyaging to Earth from Mars.

"All went well until he hit the Heaviside layer, lost control and plunged to earth. His car is buried in some hillside here in Kansas. We've got to find it.

"Leland had already sold Lakjzt to Von Tempski, and I couldn't block the sale. So I came along and set up this show, and it has been making money

for the circus, but they're not satisfied. They've seen what his electromagnetic control of space curvature can do in the way of moving things, and they want to have him hoist the elephant in the main show.

"They don't realize what a mental strain it is on him to do all that levitation. We fixed up this mechanical man to fit around him and make him more comprehensible as per the management's orders.

"But what can you do about it?" I wanted to know. "It's a shame."

"Do? Now, with your help, we'll rescue him and search for that spacecar of his. Then—*au revoir*. He'll stick pretty close to Mars when he gets back. Well, Hank, how about it? Do we swindle old Prof. Von Tempski out of his man from Mars?"

"We do that!" I answered without hesitation. "My car's outside. This is slavery. If a man like this Martian has been treated as you say, we owe him whatever we can do to help him out!"

The light in the Martian's eyes told me that he understood me and was grateful. I experienced a queer sort of thrill at the mental contact.

HAVING agreed to wait until dark, I left just before the evening performance. Returning, I nearly ran into a big beefy German whom I recognized by his mustaches as Von Tempski. He jerked past me and stamped off toward the big top lashing the air furiously with his ring master's whip. I knew at once that something was brewing, and Henderson's first words were no surprise.

"It's happened, Hank!" he growled. "We've simply got to get Lakjzt clear tonight. Von Tempski was just here, and he wants the Martian to wind up the big show tonight by juggling most of the menagerie. I told him it wouldn't go—that it was entirely a matter of mental control of enormous forces locked up in that crystal cylinder, and that no mind can heft an entire circus and not break!"

"What are we waiting for?" I said. "I'll bring the car up back of the tent, and you can slip out." I opened the flaps, stopped. "Come here, quick," I whispered. "And keep quiet."

He poked his head through the flaps beside me. Lined up before the tent were five husky teamsters, with them a dapper, fish-faced individual. He had some electrical apparatus set upon soap-boxes—a Wimshurst static machine and a dozen big condensers.

Henderson muttered in my ear. "That's Dugan, the manager. He's got a static machine! Damn him, he has us tied! Even the smallest electric field knots Lakjzt all up—paralyzes his control completely. He'll be helpless. What can we two do against those bruisers from the tent gang?"

I saw Dugan and the teamsters turn and stare in our direction. Dugan began to spin the handle of the Wimshurst machine, building up his field. He jockied the contacts and a fat blue spark crackled between them.

Then something hard and cold shoved past us—the Martian. He hung just inside the shadow of the tent, staring inscrutably at the four figures out there. Then he returned and darted here and there among his apparatus, evidently with some definite project in mind. Henderson comprehended and ran forward to help the Martian, who spun around to face him. There were a few brief seconds of that uncanny mental conversation, then Henderson came running back.

"Listen," he whispered, "we've got to fox Dugan. You go right on out to your car, now, and when I whistle give her all she's got along the south road. Follow this map!"

I strode down the narrow aisle between the two tents, walked slowly over to the car, started it, then waited. All the time I kept a weather eye on the tent and what was happening there. First Henderson stepped out, bent to tie a shoelace. A second form burst from the flaps and streaked toward the apparatus. It was the artificial, manlike husk of the Martian. Even in the shadow of the alley I could see that legs and arms dangled limply.

Dugan yelled something at his guards, quit cranking, and ran forward himself. The thin, big-headed body of the seeming Martian sped straight on, and over the row of condensers, re-

gardless of the barring electric field. Dugan sensed something wrong, stopped short, then leaped forward again with a curse as Henderson followed the Martian.

Now came the climax of the whole plan. Out of the public entrance to the tent flashed a squat cylinder of glowing purple crystal, six little globes of vivid blue fire circling it like tiny satellites. The teamsters stood aghast, staring open-mouthed. In a little streak of blue flame one of the spheres flew to meet Dugan, burst in his face with a dazzling glare of white light, blinding him. With an agonized yell he staggered forward, tripped, and lay groveling, rubbing his seared eyes with his fists and whimpering like a scared pup. The Martian had directed his dummy from the tent to fool Dugan, coming out in his true form to give battle.

The white flame blazed, three times, then again with double force Dugan and his bruisers were writhing about. The Wimshurst machine was a twisted wreck beside shattered condensers, and the squat form of the Martian was speeding toward my car, its halo of blue moons gone.

As Lakjzt popped into the car beside me, Henderson's shrill whistle split the air beyond the tents and the clamor of a starting Ford followed. I started rolling toward the south gate at thirty an hour. As I passed the big tent I noticed that Von Tempski and two ring-hands were running toward the entrance. Evidently we would be chased.

BUT Henderson had cared for that. The half-dozen hands, including old Von Tempski, who poured out into the lane of side-shows, saw his old Ford, with the artificial form of the Martian stiff beside him careen through the gate and burn up the road north. They fell for the subterfuge, and I had no pursuers.

The rest of what happened that night is a bit vague to me. In the first place, a thunderstorm was coming up, and the overcast sky was electrical with lightning. It didn't bother me in the least, but to the Martian it must have been sheer hell!

The Wimshurst machine had stopped him, and even the disturbance from the engine must have given him bad moments, but now the atmosphere was supercharged with electricity, pouring it into him with every passing second. He must have absorbed plenty of juice from the air, storing it up in himself and the car.

We were doing a good fifty on the up-grade when we came to a railroad crossing. We hit it with a tremendous jolt that clashed the rear springs and brought the back end of the car too close to the rails. It all happened in a split second. First came a brilliant glare of blue electric fire and a crackling discharge, followed by a dull boom as the gas tank went up!

The Martian beside me began to blaze with a dazzling white radiance that mounted and mounted in brilliance to a blinding peak, then went out in a smash of shattering glass as we were both blown through the windshield. I hit in the mud, messy but safe. Lakjzt landed with a crash that shattered his cylinder, leaving him fully exposed to the unfamiliar, unfriendly conditions of Earth.

I lost consciousness. When I finally came to, the storm had passed, and the car had burnt out. But where was the Martian? The moon showed me, sparkling on his shattered chrysalis just beyond me. For a moment I stood aghast at the change! For Lakjzt was entirely different from the domed cylinder that I had come to know! I had realized that it was but a covering, a protective shield against the alien conditions of Earth, but the reality of the creature within staggered me!

There was the same humanlike head and face, without the silver filaments and quartz dome, but beneath was a long, tapering cone of dead-white flesh, neckless, with a spatulate lower end like the body of some sea-slug. Just beneath the tiny chin sprang a tangle of fine gray filaments, like little ashen tendrils, writhing feebly.

He was not yet dead! The moving tentacles and the agonized pleading of his great eyes told me that. The pressing atmosphere of Earth must be sheer torture to his unprotected body. Overcoming my instinctive aversion in pity

I bent down and scooped up the limp body of the Martian. The moon was high, and by its dim light I looked down at the creature I held in my arms. It was surprisingly warm. All over the smooth flesh were long scratches from the broken crystal, and the blood that oozed from them was as red as my own from a painful shoulder gash. Above all, its head was human—it was human! Those great eyes were pleading with me again, trying vainly to penetrate my dullness, to speak!

I COULD all but sense the agonized thoughts that battered at the portals of my brain. He wanted to tell me something, something vital! I felt a tugging at my arm, something thin and warm twining about it—the tiny gray tentacles of the Martian. They were trying to pull his body higher, toward my wounded shoulder. For a moment I stood puzzled. Then the truth swept through me, and I raised him in my arms.

Those gray filaments were nerve fibers. Eagerly they played over the gash in my arm, probed it, dug into the exposed flesh. There was a moment of burning pain when I nearly dropped him, as nerve met ruptured nerve and made contact. Then the pain vanished, and distinct messages were leaping through my brain, the thoughts of the Martian pouring into me through the connected nerves of my arm. I received pictures, sensations, even emotions, and I knew that they likewise surged in that little human head and three-foot cone of flabby flesh.

One thing was clear enough. He wanted to leave here—to go somewhere and go fast. Where? My unspoken question must have passed over the gray network to the Martian's brain, for at once there came a sleepiness, a sort of creeping numbness over my whole body. I let myself go limp. But my arms did not unclasp, my knees did not collapse. Without hesitation my body turned and stalked off through the corn. The Martian had taken over control!

That last stage of our strange journey was the most uncanny of all experiences. I had none of the sensations of walking, of holding the dead weight of the Martian. I, the detached, mental I, was utterly apart from the thing that was my body.

Fatigue is largely mental, and the brain that now ruled every sensation and motion of my body was the brain of the man from Mars. Under the control of this alien creature, spurred by a mind not of Earth, I was performing feats of strength that should have been impossible to a wounded man.

Yet, my mind was alive, observing this insane cross-country dash, and enjoying it! The thrill was beyond all tempering of reason.

At last we reached what looked to me like a small hill of raw earth. I watched my erstwhile hands strap the Martian to my back with my suspenders, then plunge into the earth of the hillside and begin tearing away at it like a dog on the trail of a mole. Idly, I watched me, eagerly awaiting the results of my hands' wild burrowing.

The layer of soil was thin, four feet or less in depth, and beneath lay the hulk of some flame-scarred, pitted metal. The space ship of the Martian! We had come straight across the face of Kansas to this mound of new earth, beneath which something had been calling telepathically through miles of space to the Martian.

As the last weed-grown clod fell away, I was whirling at the port with a sure knowledge of its mechanism, unscrewing it, casting it aside. I clambered into the gap, bending low, crawled through a second, sliding valve that closed behind us. In an open space I stood erect and fumbled low on the wall for a switch of some sort. Soft light sprang into being. We were within the Martian space ship!

Try as I will, I can never visualize any of the details of the welter of apparatus that surrounded me. I have only the impression of the interior of a great globe containing a mass of silent machinery, dial after dial, and key-board on key-board. Against the far wall rested a tank of bluish crystal, half full of a milky liquid. My body darted to it, my hands threw off hermetic seals with frantic haste, while over my shoulder the Martian craned anxiously.

FLOATING half-submerged in the liquid, its eyes closed, lay a miniature replica of the man from Mars! My hands lifted it gently to the face beside my own, then bore it swiftly across the sphere to another cabinet bathed in the roseate light of twin tubes. Laying it on a cushion of some soft blue fabric, I expertly manipulated the finely graduated dails set above the machine, regulating warmth, oxygen, moisture.

For long minutes our two heads stared down at the little form, lying so still and white against the blue cushion. Then its tiny filaments began to stir, flickering over its cold little body. Its lips flushed crimson once more and its eyes opened, looked wonderingly about it, fell on us.

They examined us with a wisdom ill befitting a baby of any breed or planet. A faint appeal began to swim in them. In response, my hands played again over the dials. Mechanical fingers appeared from the side of the cabinet, proffered a capsule of some colorless liquid, which the infant swallowed. Again it observed us wisely, then its eyes closed and it slept.

The tank was an incubator of some sort, set to control and delay the strangely artificial "birth" of the infant Martian. The enforced absence of Lakjzt had almost been too long.

Still under Lakjzt's control, I opened a cabinet, took out one of the crystal cylinders such as the Martian had worn before. My hands lifted him from my back, lowered him carefully into the wire-lined tube, his head and a few thin filaments alone protruding from the top. One by one the gray threads withdrew from my gashed shoulder and there swept over me an anguish of tortured mind and body such as I never want to know again. As the last fine neutral filament slipped into the tube, and as the full sense of my cruelly exhausted body hit me in one huge wave of knifing agony, I fell senseless to the floor in a heap.

Lakjzt cared for me while I lay unconscious from the strain in the body that he had borrowed and so cruelly used. Later he ventured near the farm that was to have been our destination, found Henderson there, and brought him to the hill. He removed me to the outer world and delivered me to Henderson, a bruised and battered wreck of what I had been, yet strengthening fast from the healing science of another race and planet.

Then Lakjzt bade us good-by. For an instant he hovered over me. The crystal helmet tipped back, and two fine nerve-threads flickered forth, sought the yet unhealed gash in my arm. A brief message—a single picture—then the connection was broken, the dome shut, the man from Mars vanished into the darkness of the airlock. Henderson drew me back to the edge of the marsh, where we crouched, waiting.

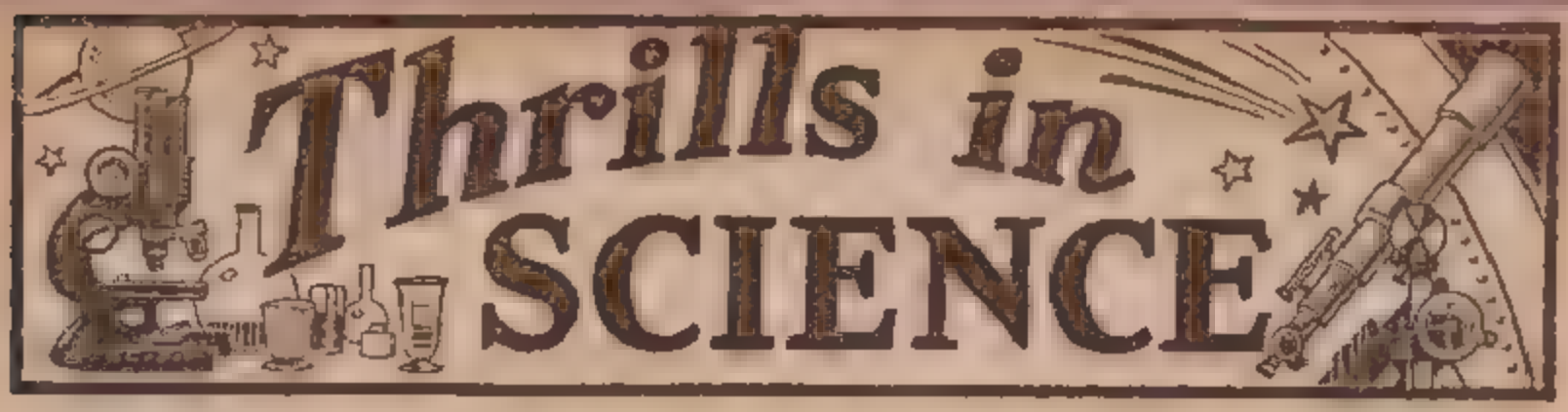
The port was closed, sealed from within. Deep within the hill sounded a throbbing as of great hidden engines, and of a sudden came a great burst of golden light, a crash of rushing air, and the Martian space ship was gone forever.

One thing rests untold. What was it that prompted the Martian to endure again the torturing pressure of Earth's atmosphere for that one moment when the connection was made and a thought, a message, flashed through my brain? The message itself is the answer. In that brief instant of contact I envisioned an Earthly mother, and in her arms, a laughing child, and I knew the answer to the riddle that had been stirring my thoughts. The Man from Mars was a woman!

ANOTHER STORY FROM

SCIENTIFICTION'S HALL OF FAME

IN THE NEXT ISSUE



Thumbnail Sketches of Great Men and Achievements
By MORT WEISINGER

THE MENTAL MARVEL OF FRANCE

ONE step. . . . "Evariste Galois," accused the teacher, "you have cheated! How can you have the answer to this problem so soon, ten minutes before the others? How did you do it?"

The shy, frail boy of 16 answered timidly, but earnestly: "By quadratics, sir. The problem is so easy by that method."

"What!" roared the instructor angrily. "You little rascal, can you stand there and tell me that, and expect me to believe you? Why, I haven't taught you quadratics. That is for older pupils."

"Please, sir, it's true!" remonstrated young Galois. "You see, I have read the texts of Lagrange and Abel and have worked all their examples."

Not recognizing the boy as a genius, the stupid instructor glared and spoke wrathfully: "That is incomprehensible. You have cheated somehow, and lied. I therefore give you a failing grade in mathematics!"

Two steps. . . .

Evariste Galois, born in 1811, was now eighteen. Still frail and sensitive spirited, his serious face already had lines of bitterness in it. Now these marks of frustration deepened as he read the reply from the great mathematician Cauchy: "Dear sir; I am sorry to report that the mathematics paper you claim to have sent me, is lost. I beg your forgiveness."

Evariste Galois

Lost! Two years of laborious composition on an original theory of algebraic equations. Two years of genius wasted!

Three steps. . . .

Galois was having his entrance examination at the famous Polytechnique University.

The professor asked sternly: "How can you know the answer to the problem without using the blackboard?"

"I did it in my head," answered Galois truthfully.

The instructor smiled sarcastically. "Only a genius could do that. You have tricked me by buying the answers before you came. Your application to this university is rejected!"

Four steps. . . .

Would no one believe that a youth in his teens was ready for a mathematical career? Galois felt his heart breaking under the successive blows of a cruel fate. One last desperate try for recognition. That paper on the theory of equations, submitted for the Grand Prize at the Academy of Sciences, Paris. Maybe he would win.

But fate engineered its crowning jolt. Experts picked his work as the winning entry. It was turned over to a secretary and this man *lost it!* Twice in two years, Galois' works of genius had been carelessly, almost maliciously it seemed, dropped into limbo!

Five steps. . . .

Embittered, he had given up and joined the revolutionists of 1830.

Six steps . . . seven steps . . . eight . . . nine. . . .

The measured beat of this mental marvel's tragic life marched through his tormented mind, as he counted off the steps

Twenty-three steps. . . .

All last night he had worked feverishly. His mind had worked with lightning insight, clearer than ever before. He had worked out and set down an algebraic principle, unknown to hundreds of great minds before him, and destined to be regarded with awe in the next century for its sublime significance.

His great discovery was this. Split an unsolvable algebraic equation into radicals which are roots of the equation. If the radicals are rational (real, not imaginary quantities), the equation is solvable. If the radicals are irrational, nothing more can be done. The rule still holds to the present day, a century later.

The twenty-fourth step. . . .

On the twenty-fifth step, at dawn of the day of May 30, 1832, Galois just 21, whirled and fired a pistol. The shot went wild, but that of his political adversary in the duel on this "field of honor" struck a vital spot. Evariste Galois and his brilliant intellect were no more.

Thus died one of the most promising mathematicians the world has ever seen. Death had ended the equation of Galois' life with a zero.

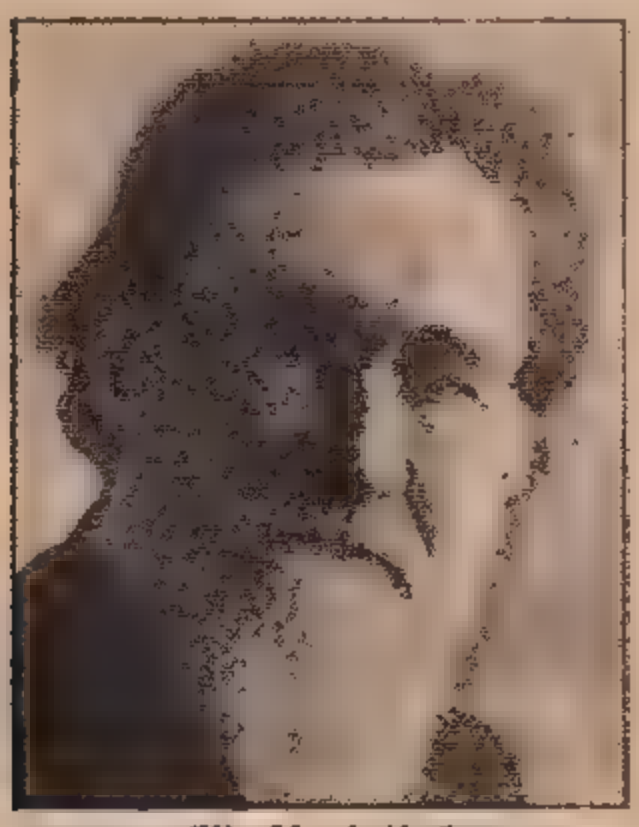
MAD ABOUT MICROBES

ELIE METCHNIKOFF gazed ruefully at the telegram clutched in his hand. Thousands of sheep were dead from his vaccine, it informed him. So he was not the great bacteriological genius he thought himself. His microbe serum had killed—not cured. Metchnikoff was a failure.

The zealous biologist stroked his majestic beard and scowled. Why was life so full of disappointments? His eyes glowed lambently as his thoughts whirled him years into the past.

Born in Russia, he had attended the University of Kharkoff. A brilliant student there, far ahead of his class, he wrote many technical papers reporting his discoveries with the microscope for the scientific journals of the day. But they were always rejected.

There was little science to learn in Russia,



Elie Metchnikoff

Metchnikoff believed, so he transferred to the University of Wurzburg in Germany. There conditions became unbearable for him. His fellow students refused to associate with him—he was a Jew. Heartbroken, the young scientist went to Italy. From Italy he went to the island of Heligoland. Driven by a relentless spirit—the desire to learn everything he could about microbes—about how humanity could conquer the menace of invisible germs—the Jew wandered.

And so it was for the indomitable pioneer. One crushing disappointment after another. At twenty-three he married. Four years later his wife had died. Metchnikoff wondered if he should follow her.

But despite these adversities, the scientist toiled incessantly. Day and night he kept his eyes glued to his microscope until they were red-rimmed, ready to fall out of their sockets. Under his precious lens he examined every organism known to science. Germ culture, tissues of muscle, samples of the blood. He studied them all, determined to find one thing—the reason why certain organisms were immune to disease. He was mad about microbes.

Metchnikoff got up from his chair, reached for his favorite pipe. He smiled wanly. It was pleasant to remember the brief years of success that had followed.

In 1844, at the age of forty-four, as the result of work on sponges and polyps, he had published an epoch-making memoir on the intra-cellular digestion of invertebrates. These observations threw a bombshell into the biological sanctums of learning. Metchnikoff had proved that individual cells of sponges took in solid particles of food and digested them in order to provide material for the growth of the young; and he told how the amoebalike eggs of a polyp ate and digested the neighboring follicular cells.

But what was most sensational were Metchnikoff's observations on the laws of immunity—the problem that had puzzled him for decades. He established the fact that certain wandering amoeboid cells attack, ingest, or absorb parts of the body which become either useless or septic and thus harmful to the organism, and also microbes of disease germs and the bacteria which have entered a wound. [Turn Page]

proved that there are organisms in the body whose sole function was to destroy any alien organic matter that might be harmful. Metchnikoff didn't know what to call these destroying cells that annihilated foreign microbes. But the Greeks had a word for it —Phagocytes! Phagocytes is Greek for devouring cell.

And so had come success. The people of Russia, forgetting for a moment that Metchnikoff was Jewish, appointed him director of a new Institute. They wanted Professor Metchnikoff to isolate phagocytes that would destroy the disease microbes which were killing off their cattle.

The fiery scientist had protested. "I am only a theoretician; I am overwhelmed with researches—some one else will have to be trained to make vaccines, to do the practical work."

But the people of Russia wanted miracles. They had paid for the Institute with their hard-earned roubles, and they demanded results. Metchnikoff was on the spot. And he was tired; he had been studying too hard.

Now Metchnikoff drummed his fingers on the surface of his desk. Yes, he had made a mistake. He had gone off on a vacation, leaving the work of an anthrax vaccine to his assistants. And now the telegram told him that it had failed, terribly. He knew what that meant. He was through at the Institute. Well, at least he had tasted the cup of success for a short time. It was sweet. Maybe—in the decades to come—he would sip it again.

But Metchnikoff, in his heart of hearts, wasn't so sure. Where would he go? He was old now. He had numerous enemies all over Europe, men who were envious of his discoveries, who [illegible] methods of experimentation. Why couldn't all scientists be helpful to each other, like the great Pasteur?

Wait a minute . . . Professor Louis Pasteur was head of the famous Pasteur Institute, in Paris. Metchnikoff had met the brilliant French scientist once. Would he remember him now? Would he give him a chance to work out his theories, uninterrupted?

Metchnikoff didn't know, but he could hope. So the Jew who had wandered all over Europe came to Paris, stood before the impressive entrance of the Institute, walked in and asked to see Professor Pasteur.

A few minutes later the two giants of their day were standing side by side, eyes locked. The Number One microbe hunter of the century was thrilled to see Metchnikoff again. He patted his bewildered fellow-scientist on the back and exclaimed enthusiastically:

"You may not only come to work in our laboratory, but you shall have an entire laboratory to yourself!"

The world lifted from Metchnikoff's shoulders. His watery eyes became steady as he visioned the future . . . another chance to learn more about microbes, to conquer the marauding hordes that menaced humanity.

History tells the rest. Metchnikoff did justify the great Pasteur's faith in him. In the years to come he battled with the microscopic foes of mankind, isolated the causes of several diseases, won mighty victories over them. In 1908 he was awarded the Nobel prize.

The man who had failed many times was a success.

DEATH OF A STAR-GAZER

NICOLAUS COPERNICUS was dying. The seventy-year old astronomer's breath came in quick, short gasps, and his frail heart beat feebly in a grim race against Death. Suddenly his eyelids fluttered open, and the eyes that had spent a lifetime charting the cosmos roamed over the men before him who had come to watch him die.

With an inaudible sigh, Copernicus sank back in his pillows, his eyes now shut. Ah, they were good, these men who stood before his bedside. The greatest scientists of the sixteenth century. Loyal, friendly colleagues in life, they would mourn his passing from the world. There had been times when he had argued bitterly with each of them, when they had claimed he was a fool to believe in certain of his astronomical theories. But he had been firm in his convictions. Proof was what they had wanted, and proof was what he had given them.

The astronomer's pale, shrunken face relaxed in a placid smile. For centuries men of science had accepted the doctrines of Ptolemaic astronomy. Ptolemy, the Egyptian mathematician, had declared that the Earth exists as a fixed body in the center of the Universe, and that the heavens revolve around it every twenty-four hours. For the next thirteen hundred years all the civilized world believed this. During all that time it was thought that the sky was a solid vault, turning round on a mighty axis fitted into sockets with the stars attached to the surface of the vault.

As a youth, Copernicus had read avidly all he could of the old writers of astronomy, and his keen mind saw that there was something wrong in the conclusions Ptolemy had reached. Night after night he would sit up in a tower and watch the stars, pondering on their mysteries. And every shred of evidence he collected took him farther and farther away from Ptolemy and nearer to something quite new—quite unheard of—the movement of the Earth around the sun. He saw that the sun does not circle the

Earth, but that the Earth and the other planets go around the sun.

But it was shocking to think such a thing in those days. All people held that God had made our Earth the center of the Universe, that ours was the greatest and most important planet in the Universe, and that all the heavens obediently attended, meekly

Nicolaus Copernicus

whirling round and round us. If it were believed that the Earth were not the center of the Universe, then, some pious men said, the importance of the Earth disappeared. That was heresy, the Church claimed!

Copernicus wrote a book to prove his theory. He knew the danger he ran, and feared to give his book to the world. For years he kept it by him secretly, and it was only after he had been stricken by paralysis that he ventured to have it printed. He named it *De Revolutionibus Orbium Coelestium* (Concerning the Revolutions of the Heavenly Bodies). But would posterity prove it accurate?

The aged scientist's eyes flitted open once more. If only he could see a copy of his book before he died. Then death would be welcome. For a moment Copernicus' features grew stern as he remembered something. Andreas Osiander, a Lutheran preacher interested in astronomy and mathematics, had suggested that the book be offered as a mere hypothesis, bearing no relation to the actual facts other than to serve as a good working basis for calculations. This way, the Church would not be offended. Copernicus had scorned this proposal. He wanted the world to know the truth.

The sun sank low in the heavens, and Copernicus felt his heart slowing down. Death was but minutes away. Suddenly there was a knock on the door. It was a messenger from the printer delivering the very first copy of his book. He thrust it into the trembling hands of the dying astronomer who had just enough strength to scan its title page. Copernicus smiled faintly, attempted to turn a page. His eyes closed finally, in death.

But Copernicus had seen only the title page of his book. Had he turned the first page he would have discovered the treachery of Osiander Disregarding Copernicus' admonitions, he had inserted a preface to the work which stated that the book was merely "an interesting hypothesis." No name was signed to this prologue, so that readers assumed the astronomer had sought to save his hide at the expense of truth.

But Copernicus had died blissfully, unaware of this deception.

●

NEXT ISSUE

The Story of THOMAS DAVENPORT, Obscure Inventor of the Electric Motor—and Other Interesting THRILLS IN SCIENCE

'Who's Afraid of the Big Bad Wolf?" "Not I," Said John Stuart as He Started to Paint the Town Red!

I smashed the apparatus with a piece of pipe

The FEAR NEUTRALIZER

By EDMOND HAMILTON

Author of "Mutiny on Europa," "Easy Money," etc.

"FEAR," said Dr. Bascom impressively, "is the curse of the world."

He held up his lean finger in pedagogic fashion to emphasize his point, his small figure rigidly drawn up and his eyes behind glittering glasses austerely focused upon my face.

I hastened to utter an obsequious, "Yes, sir," and tried to look as attentive and respectful as I could. Inwardly I was wishing I could get away from the old bore and hunt up Helen, his daughter, but I was too afraid of the irascible little scientist to say so.

"Just look at this fear-ridden human race of ours!" exclaimed Dr. Bascom. "All its happiness is thwarted and poisoned by fear—fear of what other people may think, fear of the future, fear of the consequences of every act.

"Think how happy everyone would be if they did not have dread of some kind in their minds all the time. I tell you, the human race will never attain any real progress or happiness, John, until it has banished fear utterly from its make-up!"

"That's right, sir!" I hastily responded as he again paused rhetorically. I felt by then that I had overworked "Yes, sir" lately.

Dr. Bascom's voice lowered.

"John, *I* shall be the man who releases the human race from the thrall of fear!"

"You, sir?" I repeated stupidly. My mind was really wondering anxiously whether Helen had not gone out while I was caged here.

"Yes, I!" Dr. Bascom said proudly. "Come here, John, and I'll show you what I have done."

He led me over to a table in the corner of the laboratory. There was a big cylindrical thing looming up beside the table, shrouded in a canvas cover, but what caught my attention was the mechanism on the table to which the scientist was pointing. Being an insurance agent myself, I didn't make any sense out of the thing. It looked like a complicated electrical apparatus, shielded by a nickel cover, and with a copper helix spiral around the outside of the cylindrical cover.

"Now watch this," said Dr. Bascom importantly, taking two wire cages from underneath the table.

In one was an ordinary mouse. In the other was a fluffy, smoke-colored cat that I recognized as Helen's pet Persian. I wondered if she knew her father was experimenting with it.

Dr. Bascom put the mouse into the same cage as the cat. The tiny rodent shrank into a corner, paralyzed with dread. The cat eyed it, then flattened down, its tail beginning to switch.

"You see," said the little scientist earnestly, "the mouse is in deadly fear of the cat."

"A remarkable experiment, Doctor," I congratulated him readily.

"You blockhead! *That* is not the experiment," he snapped. "Everyone knows that a mouse is afraid of a cat. But watch now!"

He put the little cylindrical mechanism on top of the cage containing the two animals. He touched a switch and the tiny mechanism gave off a faint hum.

I watched. Then I was amazed to see the mouse come out of the corner into which dread had frozen it. The little rodent unconcernedly began to wash itself with its paws.

Then, sniffing the floor of the cage, it walked across to the cat. It sniffed curiously at the Persian's paws, and around its flattened head. The cat seemed too petrified by sheer surprise to make a pounce on the mouse for the moment.

Dr. Bascom reached in for the rodent and put it back into its own cage. Then he turned triumphantly to me.

"You saw what happened?"

"That mouse must have been drunk or something," I said. "I remember reading a story once—"

"No, no!" the little scientist stormed. "Can't you see that it was this apparatus of mine atop the cage which neutralized the normal fears of the mouse and made it utterly fearless of the cat? It neutralized the cat's fears, too, but of course we didn't notice any change because a cat isn't afraid of a mouse, anyway."

I stared at the little mechanism. "You say that thing did it? How could it?"

Dr. Bascom smiled masterfully. "That is my secret, John. But I don't mind telling you the basic principle of the thing. Fear, John, is an emotion. But what largely controls our emotions? The answer is—the ductless glands. Physiologists have learned during the last few decades that such glands as the thyroid, the pituitary and others largely determine the mental and emotional make-up of an animal by the amount of their secretions.

"I have been studying the ductless glands for years. I discovered recently that one of them is definitely responsible through its secretions for the emotion of fear. In some people that gland secretes freely, and such people are consequently always fearful, even cowardly. In other people, the fear gland does not secrete so much, and people like that are unusually courageous.

"I told myself, 'Bascom, you are the greatest scientist of the age for making this discovery. But you will be even greater, you will be the supreme benefactor of the race, if you can find a way to stop the secretion of the fear gland altogether!'" He was getting excited by his own words now.

"And I found that way, John! I learned that a certain type of electrical radiation has a completely in-

hibiting effect upon that particular gland. That mechanism emits such radiation. Any subject that I put under the influence of the mechanism will have its fear-secretions inhibited, will immediately lose all its fear."

"Remarkable!" I told him. "But how is it going to benefit the race much to make mice brave with that thing?"

"John, you are a complete fool," the little scientist informed me angrily. "This little apparatus is only a model which I built to test the principle. But if I use a projector many times larger, capable of broadcasting the fear-neutralizing radiation over a great area, capable of affecting all the people in that area, it will—"

He stopped suddenly, irritated by my uncomprehending stare.

"I might as well be explaining to a wooden post as to an idiot like you," he snapped. "Get out of here, before I lose my temper!"

"Yes, sir!" I said, more joyfully than I had all the last half hour, and hastened out of the laboratory before Dr. Bascom had time to change his mind.

I HASTILY searched through the big country house for Helen, but couldn't find her. Then I went outside and saw her practicing her serve, on the sunlit tennis court.

She saw me and came up to the veranda, swinging her racket and giving me a mocking smile.

"I thought you came out this afternoon to see me," she said.

"I did," I told her hastily, "but I got to talking with your father and couldn't get away."

"Poor John," she mocked as she sat down by me. "Why didn't you summon up what spunk you have and tell him you just weren't interested?"

I looked at Helen Bascom with hungry, hopeless admiration. I'd been in love with her for more than a year but had never got up enough nerve to tell her so. There was something so proud about her dark beauty, something faintly scornful in her cool eyes that had always awed me when I felt like pouring out my admiration. It awed me now, so I sat making inane remarks about tennis and the weather.

Then suddenly it happened! And it surprised me, I swear, as much as it could have surprised anybody else. I could feel my ears burning, and there was a deep, strong hum going through my head, but I suddenly put my arm around Helen and said calmly:

"Come on, babe, slip us a kiss."

She was so utterly astounded that for the moment she couldn't resist. Before she knew it, she was on my lap and I kissed her—and what I mean, I *kissed* her!

I tell you, she wasn't any more astonished than I was. Yet for all my astonishment, I still wasn't the least bit afraid of her any more. I kissed her again, and made it even better.

Then Helen's amazement passed, and to my increased surprise she nestled closer in my arms, her eyes not faintly scornful now but soft and melting.

"Oh, John," she cooed. "I'm so glad I was wrong about you."

"Huh?" I said. "What do you mean, wrong about me?"

She explained tenderly. "I always was in love with you but I wouldn't even admit it to myself. I so hated the thought of marrying a spineless rabbit of a man such as you appeared to be. But I see now that was all pretense—that you're really, beneath it, the kind of masterful man I want."

I laughed heartily at the thought of me being a spineless rabbit. Why, I wasn't afraid of anything on earth!

I pulled her to her feet and started toward my roadster.

"Come on, kid, we're going to drive in to town and get married right now."

"Don't you think we ought to tell Father first?" Helen asked. "He'll be pretty angry if we don't."

"He'll get over it," I told her nonchalantly, and she laughed carefree assent as she got into the car with me.

I was feeling great, and I made that roadster roar going into town. We hit seventy-five and eighty on the stretches, and went around the curves on two wheels.

Helen's eyes sparkled with excitement.

"Is this the fastest you can do?" she asked over the roar of the wind.

"Not by a long shot," I called back, jamming the accelerator to the floorboard. "Hold tight, gal!"

WE zoomed down that concrete road like a comet. I almost turned us over jerking the car around a haywagon, and both Helen and I shouted with laughter at our narrow escape.

To tell the truth, at the back of my mind I was surprised and puzzled by my own recklessness, for I had always been one of the most careful of drivers. But now I got a big kick seeing how nearly I could make the old crate imitate an airplane.

Every other driver on the road was zipping along at the same suicidal speed. Cars were racing each other, cutting crazily around each other, and taking the wildest chances. We saw a half dozen bad wrecks before we got to town, but they didn't bother us—we were getting a thrill.

I drove into the city, still making sixty. Traffic was wild there, cars ignoring stop lights and signs, and colliding with each other at every corner. I headed toward the courthouse to get our marriage license.

I had to jam on the brakes when I came to a wreck that obstructed the street. A traffic cop who looked pretty wild-eyed ran up to us and stuck his head into my car.

"You came down that street a mile a minute!" he snarled. "Have you drivers all lost what little brains you had?"

"Who do you think you're talking to, Ignatz?" I snapped.

And then I did something I'd often secretly wanted to do. I reached out and gave that traffic cop my right fist square in the jaw. He toppled wildly back.

Helen giggled. I thought nothing more of it, and calmly turned the car and detoured around the wreck.

We parked a block from the courthouse, and the first thing I saw was the bulky figure of Mr. Wilson, my boss, coming along the street toward us.

He had seen me, and he was frowning as black as thunder when he came up to us.

"What are you doing running around town with a girl, John Stuart?" he demanded. "I thought I sent you out to look up that Bedford prospect?"

"That prospect can wait until I get good and ready to see him," I told my boss coolly. "I've got important business on hand."

"Important business?" he howled. "You young fool, your business is selling insurance, and if you don't attend to it, I'll fire you!"

"You can't fire me. I quit!" I snapped, and then ignored him. "Come on, Helen."

Wilson stared after me with mouth gaping as we moved away.

"That was a good job you just quit, wasn't it?" Helen asked unconcernedly.

"Sure, but I'll get another—if I want one," I told her carelessly. "The morrow will take care of itself."

Inside the courthouse, the marriage license clerk was just closing his window. I pulled it open again.

"Come on, hand out a license," I directed. "You're not supposed to close for two hours yet."

"So what?" he sneered. "I feel like taking the afternoon off, and I'm going to do it."

"A license, shrimp, or I'll come in there and take your office and you apart," I told him ominously.

I didn't scare him a bit, I must admit. He was a withered, pint-sized little fellow with whom I could have wiped up the floor, but he just yawned boredly at me as though he were annoyed by something trifling, and flipped out a blank to me.

"Fill that in," he told me, scowling. "And don't start getting tough, or I'm liable to hang a mouse on your eye."

WHEN we got out of there with the license and started looking for a preacher, we found all kinds of craziness going on in the street.

I noticed a small boy stop in front of a candy store. He eyed the tempting confections inside the plate glass window, and then nonchalantly broke the window with his ball bat and helped himself.

A half dozen fist-fights were going on along the street. Then we heard a

commotion from a bank a block away, and in a few moments we learned that two thugs had walked in there and had coolly tried to rob the bank with no weapons but their bare hands!

The police were dashing around wildly, and there were wrecks and traffic snarls everywhere, due to the crazy driving. And every time two cars collided, their drivers hopped out and proceeded to stage a fist-fight beside the wreck.

A hulking fellow stopped beside us and stared admiringly at Helen.

"You're some looker, kid!" he told her brazenly. "How about shaking that creampuff and coming along with me?"

"Creampuff, am I?" I snarled, and jumped at him. He was a foot taller than I, but we were going at it hammer and tongs in a second.

A cop ran up and tried to separate us. I gave him a push in the chest and then socked my antagonist a beauty right on the chin, and he went down for the count.

The cop I'd pushed over scrambled up, and I asked him belligerently:

"Well, do you want to make something out of it?"

"Aw, everybody in town has gone nuts," he said disgustedly. "I quit this darned job." He tossed his badge coolly into the gutter and walked away.

I grabbed Helen's arm and we struggled through the confusion of the streets. We spotted a church, and in the parsonage behind it we found the scholarly, elderly clergyman busy writing at his desk.

"Can't be bothered marrying anyone now!" he told me. "I'm busy writing next week's sermon."

His ascetic face lit with unholy joy. "For twelve years I've wanted to tell my congregation just what I think of them, but I've not dared," he said. "Now, I've decided to do it. Next week's sermon will make their ears burn!"

I finally prevailed on him to leave the sermon long enough to marry Helen and me. Then, delirious with happiness, we went back out into the street and started to my parked car.

The city by now seemed to have gone completely mad. As Helen and I went on toward my car, things seemed getting wilder than ever. There were fights everywhere, and sounds of domestic dissension and battle came to our ears from almost every house we passed.

A newsboy was shouting his papers and I bought one. The editor had slapped in a last-minute editorial in big type on the front page.

"This city is full of crooks," he had written, "and the mayor is one of the biggest of them. As for the owner of this paper, here's how he hushes things up—" And the editorial went on to expose scandals about some of the paper's biggest advertisers.

Helen clutched my arm and said, "Look, John, there's a riot going on down at the auto plant!"

SURE enough, down there at the end of the street we could see a mob of surging men fighting in front of the plant, breaking clubs over each others' heads in a mad mêlée.

"What's the riot about?" I asked a man coming from that direction.

"It seems the men are beating up some of their bosses," he told me. "There's a few of them who have always been disliked, but until now the men were too afraid of their jobs to do anything about it." He laughed. "I'll say there doesn't seem to be much fear on the part of anybody today! I'm going home now to tell my wife what I think of her."

He walked on, grinning. But I had stopped dead, a sudden idea coming to me from his comment about the general absence of fear.

I was suddenly remembering Dr. Bascom's experiment with the fear neutralizer on the mouse, and was remembering the little scientist's further words, which I had not heeded at the time:

"But if I use a projector many times larger, capable of broadcasting the fear-neutralizing radiation over a great area—"

That big, canvas-covered mechanism in the corner of Dr. Bascom's laboratory! That must be just such a larger projector, I saw now, and with it the doctor had banished all normal

fear from an area that included this city.

I remembered now, too, the deep, strong hum I had heard when Helen and I were sitting on the veranda. That was when the little scientist must have turned on the projector.

And his fear neutralizer was wrecking the city. I saw at once that the process should be stopped, before this town went completely crazy.

Understand, I was not the least bit afraid of the consequences if it was not stopped. But my reason and my sense of duty told me that I ought to bring a halt to Dr. Bascom's experiment.

I told Helen, though, "I guess we'd better drive back out to your home now. We should tell your father about our marriage."

"All right, John," she said happily, and we got into the car.

It was dangerous business driving out of town—not that the danger worried us any! And once out on the open road, I let the car out again and we hummed homeward faster than we had come.

I left Helen in the living room and hastened back into her father's laboratory. It was just as I'd expected!

There in the corner stood a huge cylindrical mechanism with a spiral helix around it, uncovered now, humming away like the devil and destroying all fear for miles around.

Dr. Bascom turned toward me. He had been mixing some chemicals together at a table.

"Hello, John," he said brightly. "I've been enjoying myself—performing some risky experiments which I was always afraid to try before."

"You're an old fool!" I told him brutally. "Where's the switch of this fear neutralizer?"

Then I found the switch myself and turned the thing off. For good measure, I smashed up the apparatus with blows from a piece of pipe. Helen came running in and stood there looking aghast. I motioned her out of the room imperiously, and she meekly obeyed.

"What in the devil do you mean by this?" the doctor demanded furiously.

"That thing has nearly wrecked the city already!" I told him. "It banished all fear there, just as you intended, but instead of making people happy, it made them so reckless and foolhardy that they would soon have destroyed themselves!"

AND as I said that, for the first time, the terror of what had happened and what might have happened came home to me and made me tremble.

"Good Lord!" I said huskily, shaking with fear. "It's a good thing I thought to come back here."

The little doctor drew himself up to blast me with words, but I added quickly:

"You'd better never make another of these things, and had better keep mighty quiet about this one! If it ever gets out that you caused all that madness in the city today, you'll have a thousand damage suits filed against you."

"Hmm!" said Dr. Bascom, frowning thoughtfully at that.

"Perhaps you are right, John," he said after a moment. "It may be, after all, that fear, while it sometimes makes us miserable, is really the mainspring of the human race. Fear of the law, fear of the disapproval of others when we commit mean actions, fear of the consequences of improvidence—"

That reminded me of something and I exclaimed in dismay:

"Good Lord, my job! I forgot that I quit it!"

I grabbed the telephone and called my boss. Mr. Wilson's voice became an angry roar when he learned who it was.

"You, Stuart?" he shouted. "What do you want, you impudent young whippersnapper?"

"I want to apologize for my insolence this afternoon," I said rapidly. "I was a little out of my head, I guess. And I'd like to have my job back."

He growled, but said finally, "All right, you can have the job back. I wouldn't let you have it, mind you, if I wasn't afraid that I couldn't find as good a man as you for the place."

"I'm mighty glad you're afraid of that, then," I said, and when I hung up, I muttered, "Thank God for fear!"

Dr. Bascom told me frowningly, "John, on the whole I think you are right, and that it will save me much trouble if we say nothing to anyone at all about my experiment."

"As your son-in-law, Doctor, you can rely on me to preserve silence," I said quickly.

He turned a glittering, angry eye on me, and I quailed inwardly, for I was now in as much awe of the irascible little scientist as ever.

"Son-in-law? Hmph!" he said. "Well, if you and Helen are married, it can't be mended, I suppose. But get out of my laboratory now—I have to take this projector apart."

"Yes, sir!" I exclaimed eagerly, and respectfully backed out of the laboratory.

Helen was in the living room, and she was alarmed and worried as she ran toward me.

"John, I've just realized what dreadful chances you took in driving so recklessly, and in starting fights with all those men!" she exclaimed. "And losing your temper that way with father—smashing his apparatus! I guess I was too excited to be afraid then, but I am now!"

She put her arms around my neck and said earnestly:

"John, I want you to control this reckless fearlessness of yours from now on, to keep it suppressed and hidden as you did formerly. Promise me that you'll do that for me."

Her eyes were pleading. I put on a rueful look and said reluctantly:

"It'll be hard for me to control it, darling. But I'll do it—for you."

FORECAST FOR COMING ISSUES

MARS! Red planet of mystery. Its multiple canals an endless source of wonder to men of Earth. And on that world one man controls the destinies of a forgotten race! And that man—a captive.

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* * *

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* * *

Are you a regular reader of our companion science fiction magazine, THRILLING WONDER STORIES? We'd like to know what you think of the feature novelet for the April issue, THE JULES VERNE EXPRESS, by Eando Binder. Around the Solar System in ten days! You'll be thrilled by this stirring story of the rocket race of the centuries.

Come over and visit THRILLING WONDER STORIES soon. You'll find stories by all your favorite authors in its pages—Frank B. Long, Jr., Frederic Arnold Kummer, Jr., Stanton A. Coblentz, Jack Williamson, Arthur J. Burks, and many others. And science features de-luxe—including a SCIENCE QUIZ that baffles the experts!

SCIENCE Question BOX

MEASURING LIGHT

Editor, SCIENCE QUESTION BOX:

I know that Professor Albert A. Michelson has made the greatest contribution to science in the way of measuring the speed of light. I wonder if you can give me a brief outline of his experiments, and how Michelson arrived at his calculations?—E. L., Metuchen, New Jersey.

In 1879 Michelson began a series of experiments which he repeated from time to time with more and more precision over a period of 50 years. He used Foucault's method with improved apparatus and technique. His later experiments were carried out between Mt. Wilson and Mt. San Antonio in southern California. This gave him a round-trip of about 44 miles. Instead of a rotating mirror made of a single plane surface he used an octagonal mirror. The source of light was a powerful arc.

When the rotating mirror was at rest, the returning beam was reflected from a certain face of the octagonal mirror. Then he would spin his mirror until the returning beam was reflected from the next face into the observing microscope. Obviously the light had traveled 44 miles in the time it took the mirror to turn one-eighth of a revolution. In his last experiments he was using a steel vacuum tube, a mile long, located near Santa Ana, California.

He found that the speed of light *in vacuo* is 299,796 + 4 kilometers per second, or 186,285 + 2.5 miles per second. This is a most important natural constant, and in spite of its difficulty it has been determined with more precision than any other. Both Foucault and Michelson measured the speed of light in water and found it to be about ¾ the speed in air. Also they found that in free space (*in vacuo*) the speed of light is independent of color.

The velocity of light is probably the most fundamental constant in nature since it is the velocity of all sorts of radiation, light, and radio waves as well as of X rays and gamma rays. In the theory of electricity and magnetism it comes out that the value of the ratio of the electromagnetic unit to the corresponding electrostatic unit is equal to the velocity of light expressed in centimeters per second (3×10^{10} cm./sec.). No velocity according to our present theory can exceed this velocity.—Ed

NEIGHBORING PLANETS

Editor, SCIENCE QUESTION BOX:

Having sought in vain for a reasonable answer, I am writing to you in the hope that you will be able to give me a solution of the following problem:

It has been definitely established that the world and its companion planets are round, but the curve of the Earth's surface is so gradual it appears flat. So far so good. But let us suppose that a planet was attracted to this world, and it stopped about twenty feet above the surface. Now the following points trouble me.

1—Would the people on the other planet, supposing it to have inhabitants, be upside down to us? 2—Would it be possible, without suckers like a fly, to cross from one planet to another? 3—If the force of gravity on each planet were equal would the inhabitants be able to move about?

I have had several explanations, some being that the surface of each world would be revolving so fast that each planet would see no details of the other. Other people say the whole idea is impossible and leave it at that. Perhaps you will be able to help me.—G. W., London, England.

Those people who said that the whole idea is impossible were nearest right, but they did not have to stop at that. A planet could not approach the Earth and stop at twenty feet from its surface any easier than you could slide down the side of a rainbow. The laws of nature would not permit it. If they came close enough (within thousands of miles), they would speed toward each other at increasing speed and crash, probably destroying both.

There is not even the slightest possibility that they would stop when only twenty feet from each other. It is like jumping off the Empire State Building, falling faster and faster as you near the ground thousands of

In this department the editors of STARTLING STORIES will endeavor to answer your questions on modern scientific facts. Please do not submit more than three questions in your letter. As many questions as possible will be answered here, but the editors cannot undertake any personal correspondence. Naturally, questions of general interest will be given the preference. Address your questions to SCIENCE QUESTION BOX, STARTLING STORIES, 22 West 48th Street, New York City.

to remain suspended above the ground. So you see there is not the slightest chance of it happening.

However, if there were any force that held the planets twenty feet apart, the people of each world would not seem upside down to each other, because they would not be able to [illegible] gravity that holds people to the surface would be counteracted by the gravity of that planet which was the largest, and everything loose would fall to one world.

If the gravity of both were exactly the same, objects would be suspended between them.—Ed.

THE MONSTER METEORITE

Editor, SCIENCE QUESTION BOX:

What is the size, and what is known of the largest meteorite ever to land on Earth? —R. S., Clearwater, Florida.

A photographic survey from the air of the place where one of the largest known meteorites fell on June 30 1908, in the region of Po Kamennaya Tunguska in Siberia was recently carried out by an expedition sent out by the Meteorite Commission of the Academy of Sciences of the U.S.S.R. oddly enough. As many as 1,500 photographs were taken which, despite the long lapse of time, show uprooted trees lying over a radius of 12 to 15 miles. It is thought that the meteorite broke in two pieces when it fell.

At the time of the fall, the glowing trail of the meteor could be seen almost throughout Siberia, and the terrific noise was heard several hundred miles away. The luminous silvery cloudlike vapor that was formed at an altitude of 50 miles as the meteor struck the Earth's atmosphere cast its light over a vast territory including the Caucasus. It was estimated that the meteorite weighed several hundred tons and penetrated the Earth to a great depth.—Ed.

THE HUMAN BRAIN

Editor, SCIENCE QUESTION BOX:

Is there much difference in the sizes and weights of the brain in different human beings? Do large brains go with genius?—B. O. S., Hartford, Conn.

Compared with that of other organs, as well as the body as a whole, the variability of the normal brain is relatively very small. The mean weights of the male and female cerebrum are approximately 1400 and 1300 grams respectively with the corresponding 'normal' extremes in the vicinity of 1750 and 1100 grams for males and 1600 and 950 for females, Dr David Wechsler, in his book, "The Range of Human Capacities," points out.

But in the case of the condition known as an encephaly the weight of the brain may be greatly diminished and many cases are reported in medical literature of weights under 100 grams. In this connection it must be noted that most of the weights recorded are of microcephalics who died before maturity. The lowest on record is that of an Italian female, age 41, with a brain weighing only 289 grams. The woman was naturally a mental defective, but above the grade of idiot.

Very large brains, unlike very small ones, do not seem to be associated with pathological conditions. The maximum weight reported for the human brain is in the vicinity of 2000 grams. The brain of Cromwell is said to have weighed 2231 grams that of Byron 2,0[illegible] but neurologists are inclined to reject the figures for these two as unreliable. The reported weight of Turgenieff's brain (2015 grams) which was also at first questioned, is now accepted.

The 'heavy' brains reported have usually been those of men of genius, and there would seem to be some correlation, though not a great one, between size of brain and mental capacity. Nevertheless, Anatole France and other men of exceptional ability have had unusually small brains. The brain of Walt Whitman weighed only 1282 grams or more than 200 grams less than the average.—Ed.

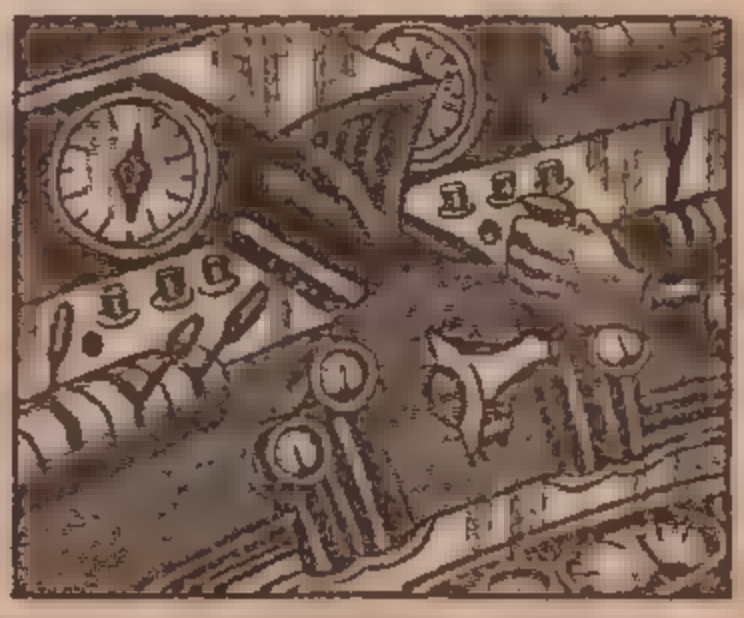
A TIME-TRAVELING MACHINE EXPLODES ON A MILLIONAIRE'S DOORSTEP

IN

THREE WISE MEN

A Story by LLOYD ARTHUR ESCHBACH

—in a Coming Issue



TURNABOUT

By WILL GARTH

Author of "Rays of Blindness," "Great Illusion," etc.

FIVE of the men in the great room sat quietly, staring apprehensively at the metal cylinder resting on the chromium table. The sixth man, old Harvey Harris, stood by the window, his eyes shut, thoughtful.

Lean, gray-haired Dr. Samuels broke the silence. "Gentlemen," he began, his tones crisp, "it has been two weeks since the disappearance of our colleague, Hugo Stone. Stone is the world's greatest expert on atomics, and it is a certainty that without him we can never complete our machine for delving to the center of the Earth. And

they're asking a million dollars in radium for his release—radium which we have, but which we need to drive our Borer!"

As Dr. Samuels went on, discussing the kidnaping, Harvey Harris scowled somberly. Suppose it were he who had disappeared. Would his associates be as gravely concerned? He wondered, frowned. He was only a mathematician, and could easily be replaced. He knew why he had been allowed to work with the combine. They were sorry for him. Five years ago a laboratory explosion had almost killed him. They had let him stay on, sympathetic. But rarely had they given him any work.

Harris shrugged his frail frame. Yes, if he had disappeared, the only one who would miss him would be his faithful assistant, Connors. Understanding Connors, who took all his dictation, even read aloud to him about the wonders of the heavens. For astronomy was Harris' hobby.

Samuels was still speaking. "This cylinder landed on Earth yesterday, its contents a strip of movie film which proves that the efforts of the Interplanetary Police are in vain . . . that Stone is captive on a space ship past Saturn. How the kidnapers were able to get out that far in two weeks, I don't know. Pursuit is hopeless, for it would take our fastest ship about a month to reach that vicinity. It's bad news, just when we had a tip that Stone was being held captive on Earth's moon!"

As Dr. Samuels motioned to an attendant, the lights dimmed, and a movie projector snapped on, its image cast on the great white walls. First the men saw Earth receding in space. Then the familiar firmament. From the sound-track came the kidnaper's voice, his tones disguised.

"We're nearing Saturn . . . You can see, by the relative position of Jupiter as seen from Titan, one of Saturn's moons, that we have your man somewhere around here." . . . Then came a close-up of Stone, his features imploring.

"That's right," cried Samuels. "You can see several of Saturn's moons sweeping past to the right, like metal balls to a magnet. Rhea, Tethys, Hyperion, Phoebe—did you see them all scoot by? Stone is out there, all right, and we'd better pay up!"

But Harvey Harris interrupted. "I wouldn't advise doing so, Samuels," he said quietly. "The Police are probably right, and I wager they'll find Stone on our own moon. Examine that movie film closely, and you'll discover it's a clever fake, manufactured with miniature models. Those pictures were never taken in space!"

"What? Didn't we see the moons—"

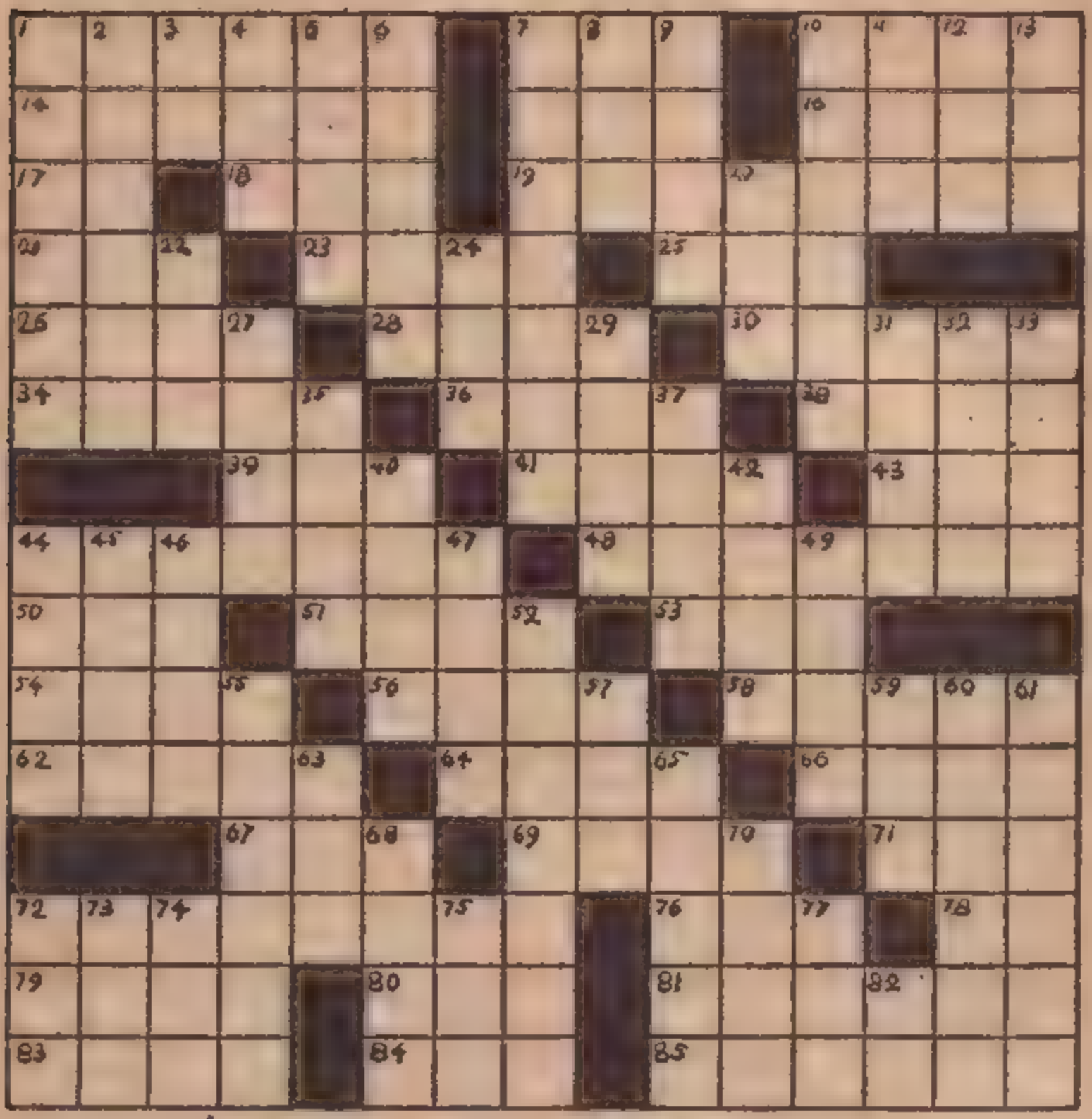
"Yes," continued old Harris. "But the kidnapers made one mistake. You said you saw all the moons speeding in one direction past Titan. But any astronomer will tell you that nine of Saturn's moons revolve one way, normally. But the tenth—Phoebe—revolves in retrograde transit, in the opposite direction from the others. Our kidnapers forgot that simple little fact!" Saying so Harris reached for the door. He smiled wistfully to himself. Old, was he? Useless? Thank God he knew his astronomy.

Dr. Samuels turned to the other members of his staff.

"Ironic, men, isn't it," he said slowly, "that we who have eyes didn't see what Harris—*blind since that explosion*—realized in a moment. Maybe *we've* been blind for five years. . . ."

A Short Short Story Complete on this Page

SCIENTIFIC CROSSWORD PUZZLE



HORIZONTAL

1—One-celled animal
7—Gram-molecular weight
10—Animals used in the laboratory for experimentation
14—Cylindrical body turning on its axis
15—Old World manlike monkey
16—An air
17—Rare metallic element associated with erbium and yttrium (abbr.)
18—Small, strong barrel, usually of 5 to 10 gallon capacity
19—Loose lens-shaped mass of cells belonging to the corky layer of plants
21—Female germ cell
23—Instrument of manual operation
25—Code signal for assistance in wireless telegraphy
26—Strong-scented plants used in medicine for stimulating effects
29—Untruths
30—Disease of the alimentary canal
34—Sharp, shrill cries
36—The moon
37—Central part or hub of a wheel
39—Small social insect
41—Finely divided rock material mixed with decayed matter
43—Edge of an object
44—Whitish-gray metallic element of the platinum group, used only in alloys, especially with steel
48—Small ridge or prominence, as on a smooth surface
50—Atom bearing an electric charge
51—Front part of a vessel
53—American Medical Association (abbr.)
54—Extra strong beer
56—Parasitic insect
58—Excess of the solar year over the lunar year
62—Rate of motion
64—Point of the compass at which the sun rises in the equinox
66—Sound given back by an opposing surface and returned to its source
67—Bony rod attached to the spine
69—Oceans
71—Organ of hearing
72—Poisonous product derived from decomposing nitrogenous matter
76—Interplanetary Police Patrol (abbr.)
78—Yellowish metallic element whose salts

[The solution is on Page 125—if you MUST look]

burn with a red flame (abbr.)
79—Skin of a large animal
80—Medicine used for head colds
81—Essential parts of every cell
82—Social honey-gathering insects
84—Delirium Tremens (abbr.)
85—The discoverer of vaccination (first name)

VERTICAL

1—Vessel conveying blood away from the heart
2—Place where corpses of the unknown dead are exposed for identification
3—Chemical suffix denoting an alcohol
4—Large deer of northern forests
5—Fleshy juicy root of biennial herb
6—Crude cream of tartar
7—One of the small bones of the middle ear
8—Open (poetic)
9—Piece of glass bound by two surfaces of different curvature
10—Dried grape
11—Part of a circle
12—Piece of timber or metal used to bind two bodies together under tension
13—Salt
20—An inverted conoid used as a toy by children
22—Colloidal substance in a congulated condition
24—Greasy liquid of vegetable, animal, or mineral origin
27—Small biplane equipped with machine guns and a powerful engine
29—Precipitation taking the form of minute crystals of ice
31—Small singing bird
33—Type of eye that is supposed to cast a spell on a person or animal
33—Powdered or sprinkled
35—Clip
37—American Interplanetary Rocket Association (abbr.)
40—Upper stratum of earth filled with roots of grass and other small plants
42—White earth-like calcium oxide
44—Twelve pairs of arched elastic bones extending from the vertebral column
45—Circular band of wood or metal
47—Small permanent spot on the skin
48—Upper part of the back of the neck
52—Carnivorous quadrupeds that prey on smaller mammals and birds
55—Dyestuff composed of the dead bodies of the females of the scale insect
57—Chemical suffix used in naming enzymes
59—A mixture consisting of one part of alcohol, two of chloroform, and three of ether
60—A mild drink following a strong one
61—Exposed to the full force of the sun's heat
63—Prefix for through
65—Science-fiction pseudonym used by Dr. Eric Temple Bell
68—Warm-blooded, feathered, egg-laying, vertebrate animal
70—Potato
72—Bachelor of Philosophy (abbr.)
73—Exact equality in number for and against
74—Poem
75—Open fabric, woven or tied with meshes
77—Past Commander of Warships (abbr.)
82—Sixth tone of the diatomic scale

IN THE NEXT ISSUE

THE PRISONER OF MARS

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By EDMOND HAMILTON

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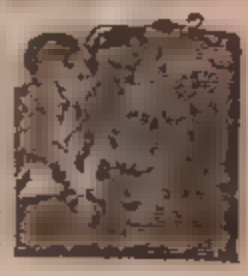

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MEET E(AND)O BINDER!

O ABOUT E: Earl Andrias Binder, born in Austria in 1904, was six when the family migrated to America. He passed his boyhood in northern Michigan, a devotee of outdoor pursuits. At 17 he adventured alone to the big city (Chicago), and eventually became chief clerk of the well-known Chicago Club.

This left him little time to follow his natural urge—writing—but it finally cropped out in the form of science fiction. Earl had always had a knack for telling stories verbally (tall ones, too!). Both of us were science fiction fans. We began writing stories as a hobby. Sales rewarded our collaboration.

Earl Binder

To tell something of my brother's *persona*, he is medium height, sturdily built, has curly black hair, and a jolly soul. Married; two daughters. Pet hobby next to science fiction—fishing. Employed at present as structural inspector for Crane Company, Chicago. Of our own tales, he picks "Dawn to Dusk" as the best.

To give an interesting anecdote of Earl's life, he nearly joined the Navy in his teens. But the next day, before he was duly signed, he was offered a job in a printing plant and turned his back on seafaring. He calls that the moment when fate held him dangling precariously between the (printer's) devil and the deep!

* * *

E ABOUT O: Otto Binder, born in the Michigan peninsula in 1911, had his eye on a chemist's career till he graduated from high school in 1929. At this point the economic structure of America went haywire and banks collapsed like the Hindenburg Line, including the one in which Otto had his college savings. He had to resort to night-schooling to continue his education, but the chemistry career became a chimera.

So, as fate would have it, Otto concentrated on writing as more than the initial hobby it was. Our collaboration launched him to that career.

My brother, to give a word picture, is fairly tall and slim, has wavy hair, ambition, likes bridge, tennis and olives. He is single and lives with brother Jack's (artist) family in Manhattan. Through no doing of his

own, he is an uncle ten times. Our family includes two other brothers and two sisters, all married. Otto's favorite story, from our collection, is "Chessboard of Mars."

In his amateur chemist days, Otto provided the family with thrills and excitement. Once, on a Thanksgiving morning, he blew up half his apparatus (but luckily neither himself nor the turkey) producing hydrogen. On another occasion he started a phosphorus fire which to our relief was mostly smoke, but gave himself a burn that took a month healing. Since then he has gone the limit, destroying whole worlds—in fiction!

* * *

Eando about Eando: "The First Martian" was my initial published story and it appeared in print in 1932. Since then some sixty other tales have followed, for a total of around 700,000 words. Hope to reach a million soon. Shortest story, "Static," 2000 words. Longest, "Enslaved Brains," 60,000. Most fan mail received on "Dawn to Dusk."

Otto Binder

I am glad to see science fiction slowly but certainly gaining ground as a form of literary expression. It is the healthiest form of extrapolation in the history of mankind, in that it teaches the principle of looking ahead, rather than back.

I am happy to be represented in STARTLING STORIES. I feel that my novel, "The Impossible World," is my best effort in the longer lengths.

THE JULES VERNE EXPRESS

Around the Solar System in Ten Days! A Novelet

By EANDO BINDER

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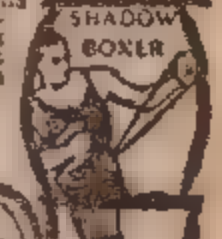

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TIME-TRAVELING
By AMELIA REYNOLDS LONG

At last I believe in time travel, for you certainly have taken us back to the good old days when science fiction had some real viscera, and before most of it had lost its wonder through the sheer extravagance of mechanical magnitudes. And you have accomplished time travel in another way as well; for you have brought back to us a writer who has passed out of time as we know it.

The idea of Scientifiction's Hall of Fame intrigues me, also. May I nominate for it Lawrence Manning's "Seeds From Space"? It appeared in Wonder Stories back in those good old days I was just talking about. And by the way, what has become of Manning? Has he strayed from the scientifield, or is he only to be seen at long intervals, like a transit of Venus?

Now just one request, if you please: When a companion magazine for THRILLING WONDER STORIES was first spoken of, I got the idea that it was to use some weird material. Would that be a possibility? At present there is on the market only one good weird magazine, and a spattering of publications which we buy in all innocence and then hide under the coal pile in the cellar for fear of what our family and friends would say. Couldn't STARTLING STORIES use just one weird story in each issue?

In every way, your new magazine certainly has made a debut with banners flying and trumpets sounding. But I'll bet you the rim of a coal hod against the thumb-space it encloses that you can't keep that pace up; it's just too much to expect. However, I'm hoping furiously that I lose the bet.—725 S. Twenty-fifth Street, Harrisburg, Pa.

(STRANGE STORIES—our newest magazine—features weird and fantastic stories by such famous authors as Manly Wade Wellman, Otis A. Kline, Ralph Milne Farley, Henry Kuttner, Robert Bloch, August W. Derleth, and others.* Why don't you try something for this magazine? See you in print. —Ed.)

STARTLING STOPS HIM
By JACK WILLIAMSON

CONGRATULATIONS ON FIRST ISSUE STARTLING STORIES STOP WEINBAUM NOVEL MAGNIFICENT STOP FEATURES GUEST EDITORIAL HALL OF FAME PICTURE STORY TOPICS IN SCIENCE ALL EXCELLENT AND EXCITING STOP BELIEVE STARTLING SHOULD FIND WELCOME PLACE IN FIELD STOP I LIKE COMPLETE NOVEL POLICY AND HOPE TO CONTRIBUTE STOP—Star Route 1, New Mexico.

WELLS, WELLES? WELL?
By P. SCHUYLER MILLER

Whyn't you folks at STARTLING STORIES try to get Orson Welles' script for the adapted "War of the Worlds" to run as one of your reprints of classics? It shouldn't run to more than short-story length and would be a very famous and distinct novelty—the biggest thing since Locke's "Moon Hoax," as a matter of fact. No critic these days can even dare to claim that science fiction isn't taken seriously.

Lacking that, let your galloping reporter get interviews with the people who claim they saw the Martians land. Lacking both of these, circulate a letter from fans and writers to Mr. Welles complimenting him on a swell job.—302 So. Ten Broeck St., Scotia, New York.

(See Scientifiction's Hall of Fame in this issue. Surprised?—Ed.)

LIKES REVIVAL OF THE FITTEST!
By RALPH MILNE FARLEY

Congratulations on STARTLING STORIES, and especially on THE BLACK FLAME. It is unquestionably Weinbaum's best. You ought to add his name to your heading of "Scientifiction's Hall of Fame," for he certainly measures up to Poe, Wells, Doyle and Verne.

And, what is quite unusual in a new magazine, your two shorts are not "fillers." I like your idea of reprinting one outstanding story per issue.—1265 Fairview Ave., So. Milwaukee, Wisconsin.

A STANDARD FOR THE FUTURE
By BURT SCHUYLER

I have never written to a magazine before, but I feel that, at last, I must. Any superlatives that I could use in describing Stanley G. Weinbaum's "The Black Flame" would seem superficial. I have read science fiction for eight years, but in all that time I have never come across a more fascinating story.

My one hope is that you will adhere to the high standard that you have set for yourself with your first issue of STARTLING STORIES.—Chicago, Ill.

LIKES BINDER NOVELS
By CHARLES L. COTTRELL

I salute you, in the name of science fiction, for the perfect start! A more liked, or a better known author could not have been represented in the first issue of your magazine. I am eagerly awaiting the next issue.

As to the Penton and Blake series, o k. But keep Carlyle and Quade out. At first they were somewhat amusing; but one gets tired of the same characters after a time.

The authors I would like to see represented in your magazine are as follows. There are no particular favorites. I like them all: Eando Binder, D. A. Stuart, E. E. Smith, Norman L. Knight, Jack Williamson, Warner Van Lorne, John R. Fearn, A. J. Burks, John Taine, Murray Leinster, Laurence Manning, Festus Pragnell, Benson Herbert.

THE ETHER VIBRATES—with the letters sent in by loyal followers of science fiction. Add your voice! This department is a public forum devoted to your opinions, suggestions and comments — and we're anxious to hear from you. Remember, this is YOUR magazine and is planned to fulfill all your requirements. Let us know which stories and departments you like — and which fail to click with you. A knock's as welcome as a boost—speak right up and we'll print as many of your letters as possible. We cannot undertake to enter into private correspondence. Address THE ETHER VIBRATES, STARTLING STORIES, 22 West 48th St., New York, N. Y.

Get the Binder boys to do another masterpiece as good as some of their older stories. Something like their novels, "Dawn to Dusk," "Spawn of Eternal Thought." —Box 461, Red Bank, N. J.

(We believe the novel by the Binder team, in this issue, is the best they have ever conceived. Do you agree?—Ed.)

THE REPRINT QUESTION
By PAUL H. SPENCER

I have just finished reading the first issue of STARTLING STORIES, and my impression is very favorable—except in the matter of size. You practically promised us the large size, you know. Oh well, I suppose we can't have everything. Otherwise, the magazine is really splendid. Cover, illustrations, stories, departments, and everything.

Of course, "The Black Flame" was the best, partly because it was the longest story, and partly because it was so well written—but mainly because it had a real, well worked-out PLOT; something you could really sink your teeth into! Boy! What a yarn! Few s-f stories can approach it, and it certainly is the best thing for quite some time. Congratulations on publishing it.

"Science Island" was rather well done, but somehow I don't think the mad-scientist-attempts-conquest-of-world idea is any too original. Do you? No more hack-work like this, please!

Scientifiction's Hall of Fame is just what I've been waiting for—thanks! I have read "The Eternal Man" previously, but I was pleased to see it reprinted, nevertheless. I suggest for future reprints: "The City of Singing Flame" and its sequel, by Clark Ashton Smith. How about it? What I really want, though, are some BOOK-LENGTH reprints: "The Human Termites;" "The Final War;" "The Brood of Helios;" etc. I'm sure your other readers are nearly 100% in favor of such reprints, and I urge you to take a vote on the question.

The various departments are very interesting, and add greatly to the magazine's appeal.

In conclusion, I urge you to obtain for future issues some of John Taine's unpublished novels: "Tomorrow," and others of which I have heard. I'm sure your readers would welcome them.

Well, keep up the good work!—New York City.

(Thanks for your suggestions for reprints in our Hall of Fame. But long stories are definitely out. We cannot undertake to republish anything longer than five thousand words in length.—Ed.)

THE GREATEST S-F STORY
By MARK REINSBERG

STARTLING STORIES and "The Black Flame" sure were worth waiting for! The former was a wonder of completeness; the latter was perhaps the greatest science fiction story I have yet read. My only complaint is that you did not include Weinbaum's bust in your cut for Scientifiction's Hall of Fame.

Incidentally, my nomination for your Hall of Fame reprint is "A Martian Odyssey." And the merits of my nominee need no elaboration.

To your continued success.—Chicago, Ill.

HATES SERIALS, WANTS NOVELS
By EDWARD P. HINCHLEY

Have just purchased and read the January issue of STARTLING STORIES and I find that it is the most amazing magazine that I have ever read, outside of T.W.S. of course.

In my opinion, you have found the one and only solution to the problem of presenting long novels, which means only that I stand

(Continued on page 126)

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REVIEWING THE SCIENCE FICTION FAN PUBLICATIONS

NOVAE TERRAE. 88 Gray's Inn Rd., London, W.C.1, England. Edited by Maurice K. Hanson. Associate Editors, Arthur C. Clarke, William F. Temple.

NOVAE TERRAE, a British publication devoted to activities in science fiction here and abroad, should appeal to the fantasy fiction follower who is interested in what goes on behind scenes. Despite distance from s-f publishing centers, live-wire correspondents on staff keep mag's news flashing with flashes. The Nov. issue is attractively mimeographed, and packs plenty of fan's reviews, commentary, satire, etc., in its 36 pages. If you want to keep in touch with the doings of the professional science fiction mags in England—and there are several of them—the competent crew of word-slingers on NOVAE TERRAE will keep you posted. Recommended: "Comment on the Panic," in the Nov. issue, which gives the reaction of the Britishers to the recent Orson Welles—Martian fiesta.

SCIENTI-SNAPS. 2120 Pershing Blvd., Dayton, Ohio. Published quarterly. Edited by Walter E. Marconette.

SCIENTI-SNAPS is the newest of the current crop of fan mags. Though petite in bulk, journal is smartly presented, with attractive mimeographed format and presentable illustrations. Fall, 1938 issue features verse, fiction, departments and articles by prominent fans. "How to Publish a Fan Magazine," a satire, is worth your perusal. The Sam Moskowitz article, "Can You Remember" should make the grade with veteran fans. Other articles by Jack Speer, and Fred Jackson

IMAGINATION. Box 6475, Metropolitan Station, Los Angeles, Calif. Edited by the Los Angeles Chapter of the SCIENCE FICTION LEAGUE.

IMAGINATION, probably the best of the American s-f fan mags, folds up with its October, 1938 issue, which is, coincidentally, its anniversary number. Swan-song issue carries interesting review of mag's past, its accomplishments, etc. Informal, breezy chatter of contributors to "Madge" will be missed; here's hoping the sheet gets a second wind.

NEW FANDOM. 603 So. 11th St., Newark, New Jersey. Edited by Sam Moskowitz, William S. Sykora, Raymond Van Houten and James V. Taurasi.

Scribes on staff of NEW FANDOM collect plenty of newsy data on the science fiction world, but mag's appearance could be greatly improved by a more carefully done printing job. Too many typographical errors distract attention, too. Despite these technical faults, however, H. C. Koenig, Louis Kuslan and editors serve up a meaty dish of fantasy in action the world over. Best recommended is the review department, which casts candid

BEST FUN, FICTION AND FOTOS IN

comment on the offerings in the various native s-f magazines. Below fan mags are reviewed in its columns, too. Editorial staff is already paving the way for the World Science Fiction Convention, to be held in conjunction with N. Y. World's Fair.

FANTASCIENCE DIGEST. 333 E. Belgrade St., Philadelphia, Penna. Edited by Robert A. Madle, Jack Agnew, John V. Baltadonis, Willis C. Connover.

FANTASCIENCE DIGEST is a large-sized hektographed mag, packed with typical fan stuff and fiction. Illustrations okay. Departments, etc., are ably handled, but the incorporation of some distinctive features would improve contents. Most interesting article in latest issue is, "You Can't Have Everything," by Anonymous.

D'JOURNAL. Box 260, Bloomington, Ill. Edited by Bob Tucker.

Strictly for the advanced s-f fan. Fantasy fiction's first fun-fan folio, featuring funtastic foolery. Super-science satire and burlesque. But you won't get the drift of it all unless you've been reading the pro and amateur books for years. A daffy collection of non-sc(i)ence.

FANTASY-NEWS. 137-07 32nd Avenue, Flushing, New York. Edited by James V. Taurasi.

FANTASY-NEWS is a duo-paged mimeographed sheet (sometimes four) that is issued weekly, and which manages to compress in its columns pertinent sidelights on science fiction, past, present and future. Books, scientifilms, plays, radio, national magazines, etc., all scanned regularly by hawks on staff, with few items worthy of mention escaping their attention. Mag also tips off fantasy collectors on what to hunt for, and where to hunt it. Lads behind this journal scoop to conquer . . . and snoop.

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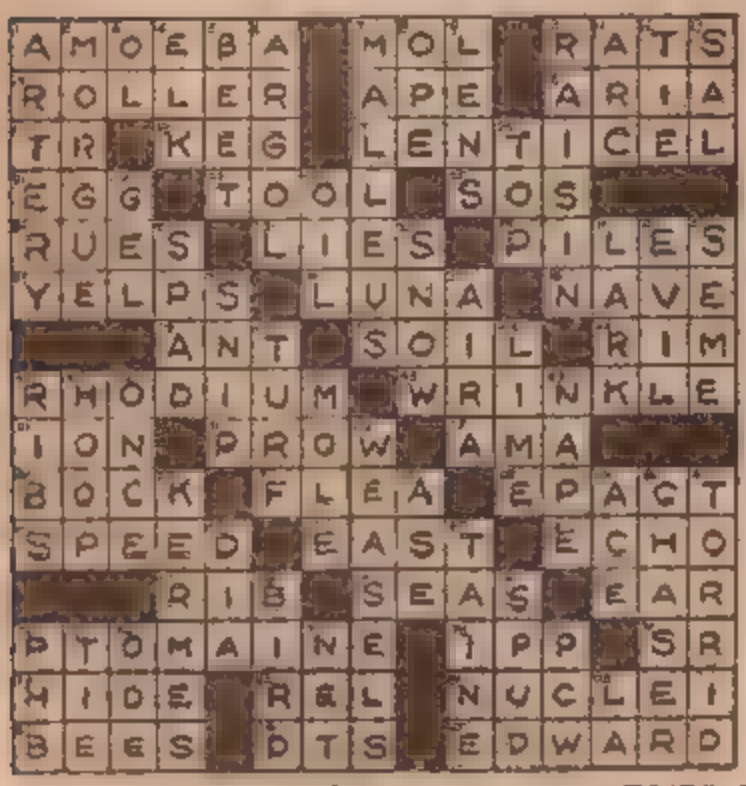
SOLUTION OF CROSS-WORD PUZZLE ON PAGE 118



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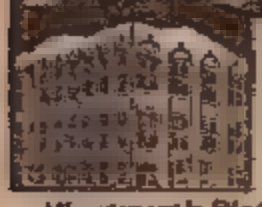

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THE ETHER VIBRATES

(Continued from page 123)

with the others in saying that I disapprove of serial stories. So come on and let's have some more stories like "The Black Flame" and more scientifiction.

My greedy eyes await the future issues of those two thrilling magazines.—Plymouth, Vermont.

TRIBUTE TO WEINBAUM
By WALTER E. MARCONETTE

Though the letters I write to professional magazines are few and very far between (if I remember rightly, the last was in 1936), I feel that STARTLING STORIES simply must receive some sort of comment. Or rather, the comment is due, not exactly to the magazine itself, but to Weinbaum's magnificent novel "The Black Flame."

If STARTLING STORIES never again publishes a worthwhile story in its lifetime (though I'm sure it will), it would still deserve a generous slice of glory for publishing this novel. For the stories of Stanley G. Weinbaum are truly a legacy that will live forever with lovers of fantastic fiction.

And of all his works, "The Black Flame" is easily the best. Its swiftly moving panorama of a strange new world, its marvelous characterizations, its crackling dialogue, its thrilling detail—all this bespeaks but one thing: GREATNESS!—Dayton, Ohio.

HOW DO YOU LIKE FINLAY'S WORK?
By JAMES V. TAURASI

I thought "The Black Flame" one of the best stories of the year. It offered me many hours of good reading. If future complete novels live up to the standard of this story you'll not have to worry about selling STARTLING STORIES. The Wesso illustrations for this story were excellent. I liked especially the small cuts showing the characters in the story. The reprint story was also good; as for a future reprint, how about Weinbaum's first yarn, "The Martian Odyssey"?

Binder's yarn was so-so, not good, not bad. The departments were all good. I liked "The Tribute to Weinbaum," by Otto Binder, very much. Cover was also good, but I'd like it better if it had illustrated "The Black Flame."

Keep up the good work!—Flushing, New York.

SCIENCE ARTICLES OKAY
By JOHN ECKHARDT

I have completed reading your new companion magazine to THRILLING WONDER STORIES — STARTLING STORIES — and found it satisfactory beyond justifiable description.

Besides your fiction stories, I find great value in your science articles; Guest Editorial; They Changed the World; Thrills in Science; Science Question Box.

Not forsaking THRILLING WONDER STORIES, I look forward with great interest to the next issue of both your science fiction magazines.

I would enjoy reading a full length novel involving the Tony (Kuttner) Quade and Gerry (Barnes) Carlyle feud.—Milwaukee, Wisconsin.

WHO CAN EQUAL WEINBAUM?
By J. J. DEMAREE

Man, oh, man! When you put out a companion magazine, you really put one out. "The Black Flame," in STARTLING STORIES, rates as one of the finest stf novels I've ever read. Only trouble is, from now on, succeeding issues will seem flat in

BEST FUN, FICTION AND FOTOS IN

comparison, I'm afraid. Won't you get a lot of letters in the future asking why you don't print something like "The Black Flame"?

I don't think even Gerry Carlyle and Quade put together will touch Weinbaum. Though let me vote here and now in favor of Carlyle-Quade. It ought to make an amusing novel, out of the ordinary run of stf.—Glendale, California.

CONGRATULATIONS
By JACK LANCASTER

I have just finished reading the first issue of STARTLING STORIES from cover to cover. Congratulations to you for such a splendid magazine. I think "The Black Flame" is one of the best stories I have ever read. Keep up the book-length novels if you have to leave everything else out. I also like Thrills in Science and They Changed The World.—Williamstown, Kentucky.

MAG. PERFECT
By WILLIAM WARCHOL

I have just completed the first issue of STARTLING STORIES. I think it is perfect. "The Black Flame" was great. I am looking forward to the following issues.—Haverhill, Massachusetts.

WON'T SOME ONE PAN US?
By RALPH SMITH

Just a few lines to let you know that I have read the current issue of STARTLING STORIES. You are to be congratulated on printing such a fine magazine and I will be anxiously waiting until the next issue is on sale.—Galion, Ohio.

NOMINATIONS
By ROBERT A. MADLE

Congratulations! The first STARTLING STORIES is almost perfect! Weinbaum's posthumous novel is certainly a masterpiece of science fiction. "The Black Flame" contained characters that shall never escape my memory. Binder's tribute to Weinbaum states what I would like to say if I had the writing ability and Weinbaum certainly deserves that tribute. Your various departments are all quite interesting, especially the fan magazine reviews and Scientfiction's Hall of Fame. Nominations for future reprints: "The City of Singing Flame" by Clark Ashton Smith; "The Voice of the Void" by Clifford D. Simak; "The Man Who Awoke" by Laurence Manning; and "The Sublime Vigil" by Chester D. Cuthbert.—Philadelphia, Pa.

MAKE-UP SUITS HIM
By WILLARD DEWEY

Your first issue is a good one! Let's have more like it.

Wesso is doing very good work, keep him. I don't see anything wrong so far—your entire layout is okay. As long as you keep the make-up of STARTLING STORIES anything like what it is now, you can be assured that I will not miss an issue. I wish you lots of luck.

For Scientfiction's Hall of Fame, I am suggesting two stories that I would like to see reprinted: "The Infinite Brain," by John Scott Campbell, which appeared in Science Wonder Stories for May, 1930. The other one is "The Lost Machine," by John B. Harris, which appeared in another magazine. Again, I ask.—[illegible] Charles St., Everett, Washington.

SUGGESTIONS
By LESTER ANDERSON

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(Continued on page 128)

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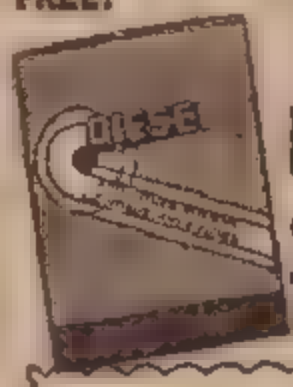

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(Continued from page 127)

zines, if you continue to publish tales like "The Black Flame." Suggestions for future novels: 1—The works of John Taine. (He should be first on your list.) 2—Weinbaum's "New Adam" and "Dawn of Flame." 3—Reprint A. Merritt's "Thru the Dragon Glass" and "Three Lines of Old French." 4—Novels by Keller, Francis Flagg, Cohlents, and other anti fascist tales. And don't forget to include some of Paul's work.—628 Montgomery Street, San Francisco, Calif.

WEINBAUM A WINNER
By HARRY WARNER, Jr.

Just a word about STARTLING STORIES. "Black Flame" is superb, and you simply must publish the other novel in this series. The characters, particularly the two feminine ones, are well delineated. The reprint was well chosen—by all means continue this feature. The other yarn also was well written, with a better ending than most. Best of luck with your new venture—it's a fine first issue! —311 Bryan Place, Hagerstown, Md.

IMMORTAL ANTON YORK?
By FRANK BRYAN, Jr.

I have just finished reading your magazine, and it meets with my full approval. I have wished for quite a while to read a magazine that would have at least one long novel. I have only been reading science fiction for a short while, and so have not read all of the older novels by Weinbaum and others. I think it would be very nice if you printed "A Martian Odyssey" once more.

As for future issues, a novel concerning the exploits of the Penton and Blake boys should be good. The Quade-Carlyle feud should also present possibilities for an excellent novel. And don't forget Eando Binder's best character, Immortal Anton York.—Hotel U. S. Grant, Mattoon, Ill.

NIX ON PUZZLES
By ROBERT MASTELL

The new magazine is a dandy. So is "The Black Flame." Margaret of Urbs has character. I liked all the features, except the crossword puzzle. Couldn't you have something like "Scientific Inventions" or "Scientific Progress," in which you could discuss the big eye, television progress, or the Harvard microscope?—2611 6th Ave. E., Hibbing, Minn.

PUZZLES OKAY
By CHARLES A. PICKI

The scientific crossword puzzle is very interesting. But why publish the solution in the same issue? Let the fellows work on it. Why not offer prizes for the best solutions? —4327 Parthenais, Montreal, Can.

PUZZLE POINTERS
By SAM YAMPOLSKY

My first impression on seeing the January issue of your magazine was disappointing. After waiting an entire month for a large size format I was certainly let down on seeing the familiar small size again. I forgot all about format, however, when I plunged into "The Black Flame." Nothing I could possibly say could do justice to Weinbaum's greatest work. For sheer entertainment I have not found its equal in the two years I have been reading science fiction. The other story, "Science Island," was not outstanding in plot or idea.

All the features were great. Most noteworthy was the classic short, "The Eternal Man." It certainly deserved the nomination.

THRILLS IN SCIENCE was a vivid presentation, as was Jack Binder's biography. Here's an idea for a future crossword puzzle.

BEST FUN, FICTION AND FOTOS IN

How about having one devoted to science fiction? You know, a test of the reader's knowledge of the literary side of science fiction. Example could be: "Name the author of the Professor Jameson series." Answer would be, Jones.

For future novels, I would like to see an Anton York intergalacial novel, or Giles' "Vis" characters in a full-length novel. And enlarge the reader's department.—240 Austin St., Winnipeg, Manitoba.

THE YEAR'S BEST
By JULIUS POHL

My vote for the best novel of the year goes to "The Black Flame." It was well matched by the cover for Binder's story. Who painted it? (Brown.—Ed.) I hope you keep up to the high level you have set for yourself.

I'm against using any of the characters featured in THRILLING WONDER STORIES in novels for STARTLING STORIES. There would be no point in your publishing two mags with the same type of story and policy. —5820 Center St., Houston, Texas.

(Your objection concerning the use of T. W. S. characters in this magazine is something to think about. What do our readers have to say?—Ed.)

WANTS AMATEUR AUTHORS
By RONALD CARTER

Have just read the first issue of STARTLING STORIES. Best science fiction mag published. Thanks for that book-length novel, "The Black Flame." "The Eternal Man" was good, but it wasn't long enough. Your departments are all nice. They come up to those in T.W.S. Finally, how about a corner for amateur writers, as in T.W.S.? 751 W. Junior, Chicago, Ill.

OUR BLESSED EVENT A HIT
By RUSSELL M. WOOD

Having been present at the birth of all the American science fiction magazines, including your new mag's daddy, THRILLING WONDER STORIES, I welcome the husky new addition to our family.

By all means let us have a book-length Tony Quade-Gerry Carlyle novel. This series is the livest thing that has struck science fiction in a long time. Why dole these stories out to us in such tantalizingly tiny installments. Let's have a real taste for a change!

Arthur J. Burks is not only an ace science fiction author; he also writes first-rate detective stories. How about a mystery story of the future by Burks?

Otis Adelbert Kline has written many good science fiction pieces, but his Martian story of several years ago topped them all. How's about another Kline Martian tale?

Dr. Keller is unfair to scientifiction fans. Somebody ought to throw a picket line around the doctor and make him come through with some more of these excellent short stories of his. Or better still, a long novelet.

The first number of STARTLING STORIES was just what I've been waiting for. The thumbnail sketches of famous scientists are very interesting and instructive. Keep them up. And the strip, "They Changed the World," by Jack Binder, is a darned good idea, too. I don't care much for crossword puzzles, scientific or otherwise, but some folks do, so I reckon I can skip that squawk, and see how the majority votes on it.

On reprints—I'm not in favor of them. Having followed all the science fiction magazines from their inception to the present, there are darned few of their stories that I haven't already read, and I like a warmed-over story the way I like turkey hash the day after Thanksgiving. However, if the majority of the readers insist—okay.—1055 Bayview Ave., Wilmington, Calif.

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30x5.00-20	20	2.65	
5.25-17	17	2.60	
28x5.25-18	18	2.60	
29x5.25-19	19	2.65	
30x5.25-20	20	2.65	
31x5.25-21	21	2.70	
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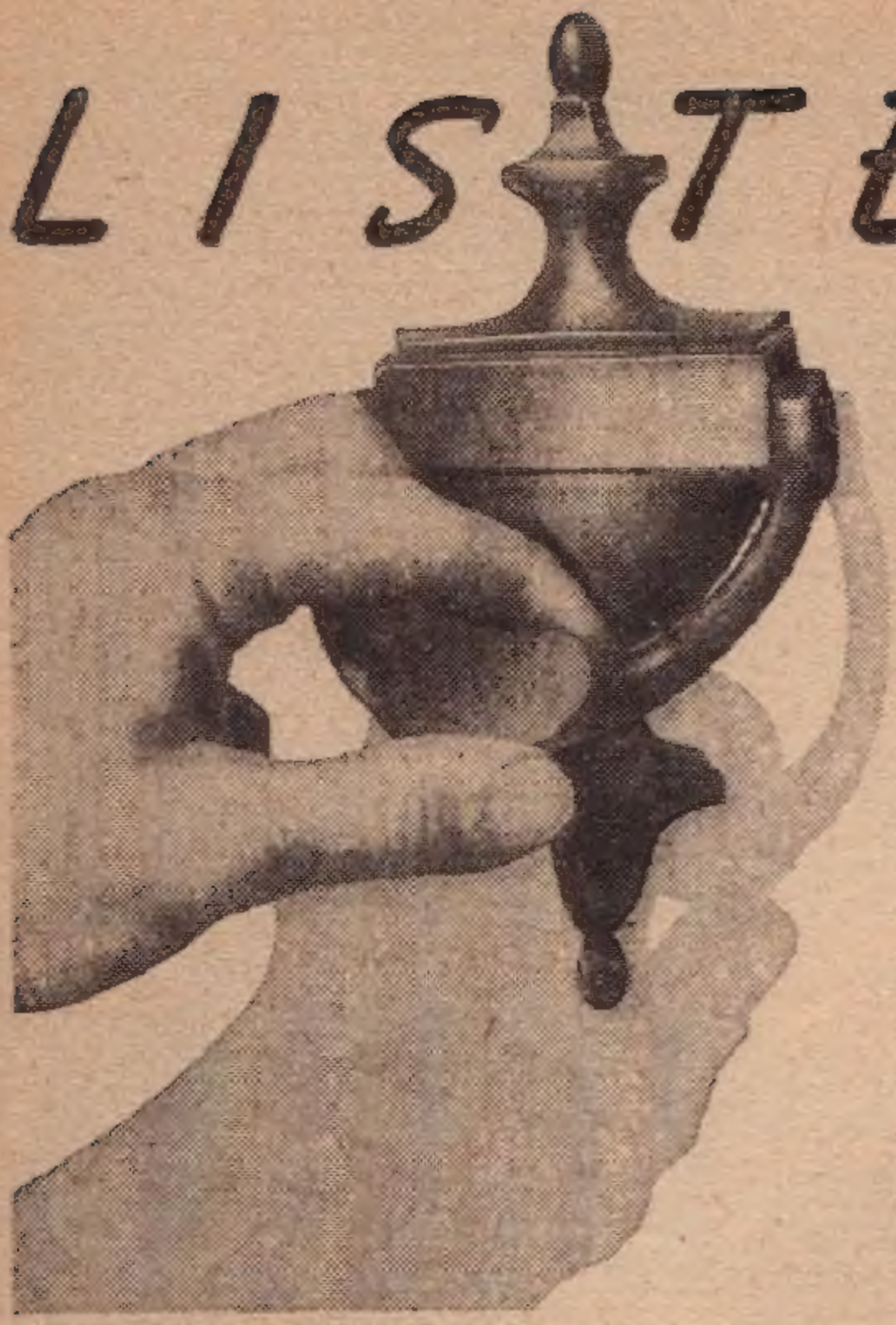

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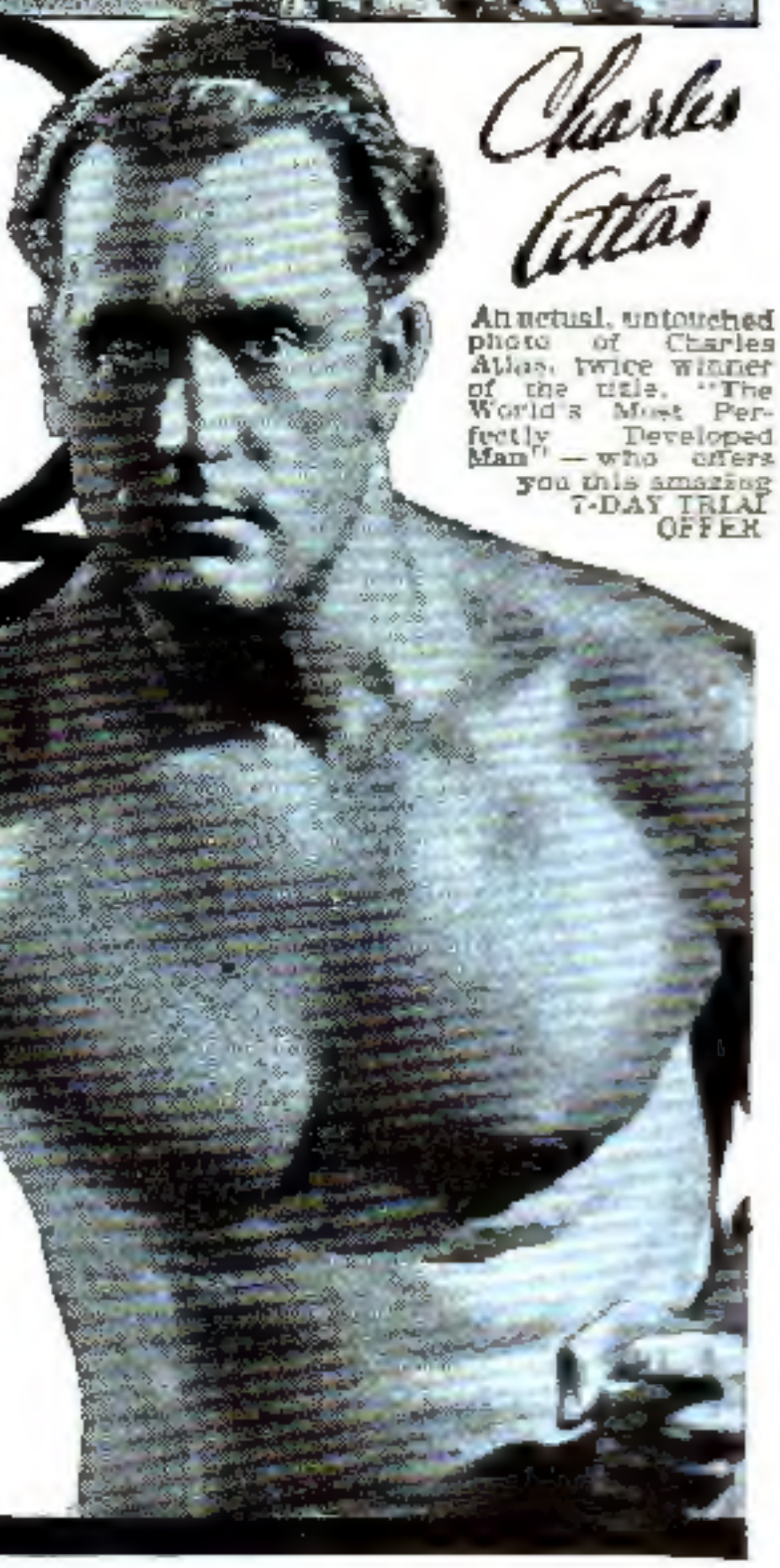

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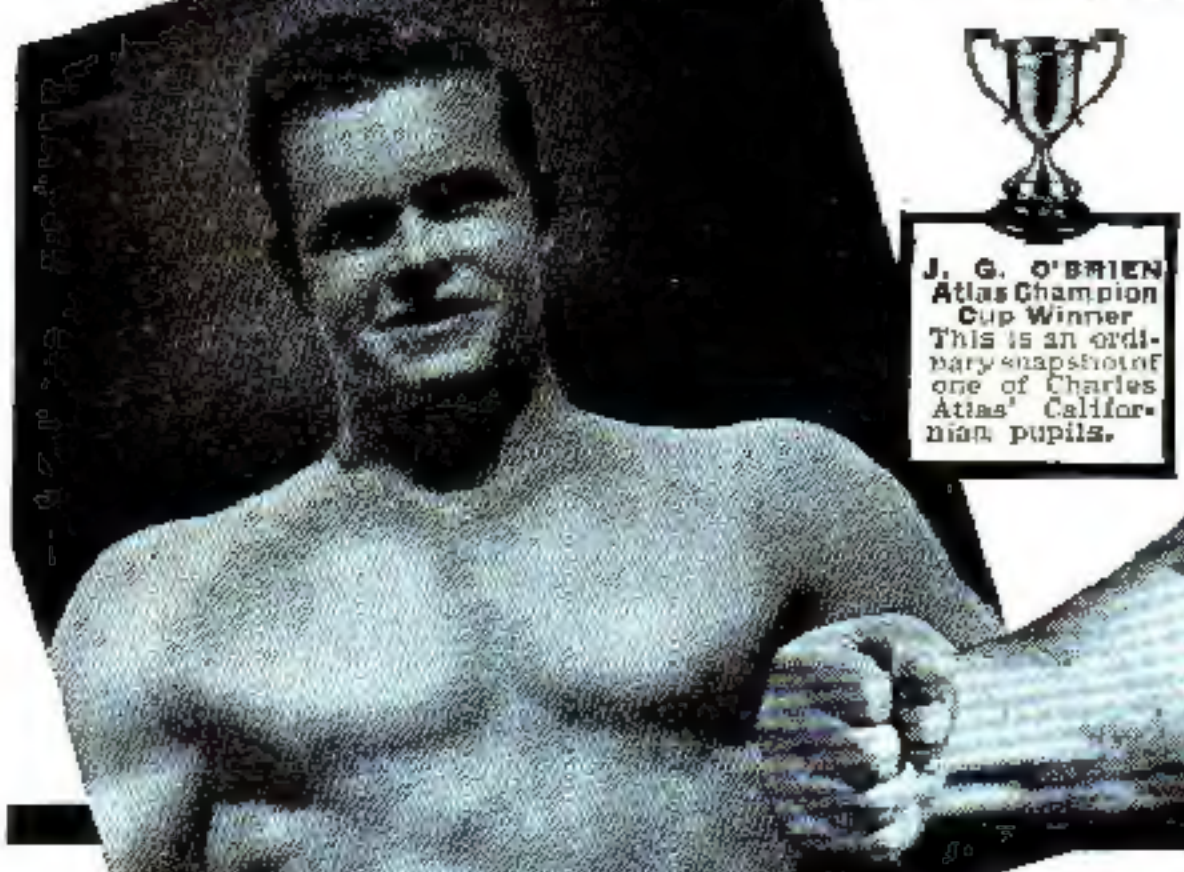

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